V20577

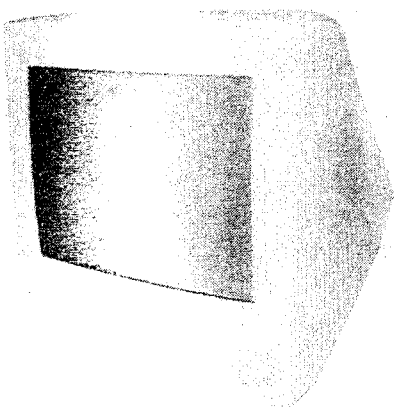
NEC

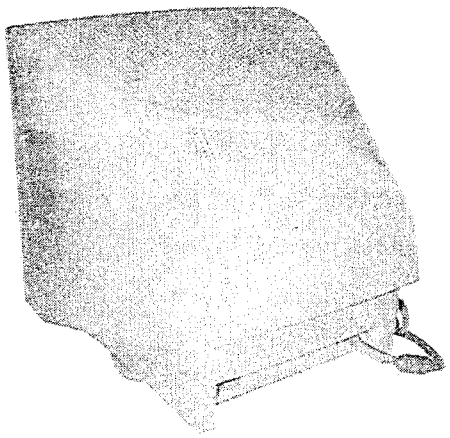
MODELS JC-1735VMA/B/R

COLOR MONITOR MultiSync® M700
SERVICE MANUAL

PART NO. 599910407

Better Service
Better Reputation
Better Profit





NEC Corporation
TOKYO, JAPAN

⚠ WARNING

The SERVICE PERSONNEL should have the appropriate technical training, knowledge and experience necessary to :

- Be familiar with specialized test equipment, and
- Be careful to follow all safety procedures associated with high voltage CRT circuit designs to minimize danger to themselves and their coworkers.

⚠ WARNING

To avoid electrical chocks, this equipment should be used with an appropriate power cord and be connected only to a properly grounded AC outlet.

This equipment utilized a micro-gap power switch. Turn off the monitor by first pushing the front panel power switch. Next, remove the power cord from the AC outlet.

To prevent fire or shock hazards, do not expose this unit to rain or moisture.

This symbol warns the personnel that un-insulated voltage within the unit may have sufficient magnitude to cause electric shock.

This symbol alerts the personnel that important literature concerning the operation and maintenance of this unit has been included. Therefore, it should be read carefully in order to avoid any problems.

⚠ PRODUCT SAFETY CAUTION

1. When parts replacement is required for servicing, always use the manufacturer's specified replacement component.

2. Comply with all caution and safety-related notes on the product display chassis and picture tube.

3. When replacing the component, always be certain that all the components are put back in place.

4. When servicing display monitor unit, it is required that the provided lead dress is used in the high voltage circuit area.

5. It is also recommended that shatter proof goggles are worn, when removing, installing and handling the picture tube. People not equipped with the proper precautionary measures mentioned should keep the picture tube away from body while handling.

6.X-radiation precaution

This product contains critical electrical and mechanical parts essential for X-ray protection. Normal anode voltage is 25.0 kV at zero beam picture tube current under AC 100-120 V (A ver)/AC 220-240 V (B ver /R ver) input, and anode voltage must not exceed the voltages shown below. To measure anode voltage set brightness for very dim picture, and use a high impedance volt meter between chassis and anode lead and measure high voltage. If high voltage exceeds the specifications on the chassis schematic diagram, take the necessary corrective action.

Table MAXIMUM ANODE VOLTAGE

beam current	at 0 mA	at 0.5 mA	at 1.0 mA
A ver	32.40 kV	31.30 kV	30.75 kV
B ver /R ver	32.40 kV	31.30 kV	30.75 kV

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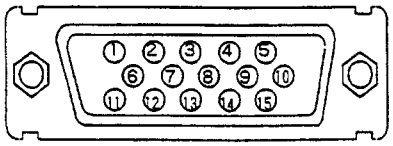
Monitor Specifications		MultiSync M700	Notes
Picture Tube	Diagonal Viewable Image Size Radius	17 INCH 15.6 inches 1370 mm	90° deflection 0.25 mask pitch, medium-short persistence phosphor, CromaClear™ CRT, multi-layered, anti-static screen coating, semi-tint screen and OptiClear™ coating.
Active Display Area (Factory Setting)		306 x 230 mm 12.0 x 9.1 inches	
Active Display Area (Full Scan)		316 x 237 mm 12.4 x 9.3 inches	Dependent upon signal timing used and does not include border area.
Synchronizasion Range	Horizontal Vertical	31-69 kHz 55-120 Hz	(Automatically)
Maximum Resolutions		1280 x 1024 @ 65Hz	Maximum resolutions based on horizontal and vertical frequencies only.
Maximum Video Bandwidth		85 MHz	

Monitor Specifications	MultiSync M700
Dimensions (W) x (H) x (D)	403 mm x 451 mm x 450 mm / 15.9 in x 17.8 in x 17.7 in
Weight	18.8 Kg / 41.4 lbs.
Current Rating	2.0 A (JC-1735VMA) / 1.1 A (JC-1735VMB/R)
Display Analog Input	Unlimited number of colors (depends upon video card).
Input Signal	Video: ANALOG 0.7 Vp-p/75 Ohms Positive Sync.: Separate sync. TTL Level. Horizontal sync. Positive/Negative Vertical Sync. Positive/Negative Composite Sync. (Positive/Negative)(TTL Level) Sync. on Green video (positive) 0.7 Vp-p and sync. (negative) 0.3 Vp-p.
Power Supply	AC 100-120 Volts 50/60Hz (JC-1735VMA) / AC 220-240 Volts 50/60Hz (JC-1735VMB/R)
Environmental Considerations	Operating Temperature 0°C to + 35°C Humidity 30% to 80% 0-10,000 feet Storage Temperature -20°C to + 60°C Humidity 10% to 90% 0-45,000 feet

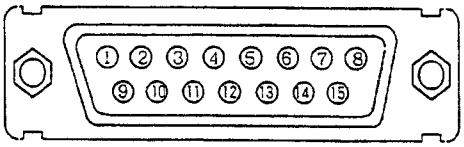
NOTE: All technical specifications are subject to change without notice.

Pin Assignment Table

MINI D-SUB 15P

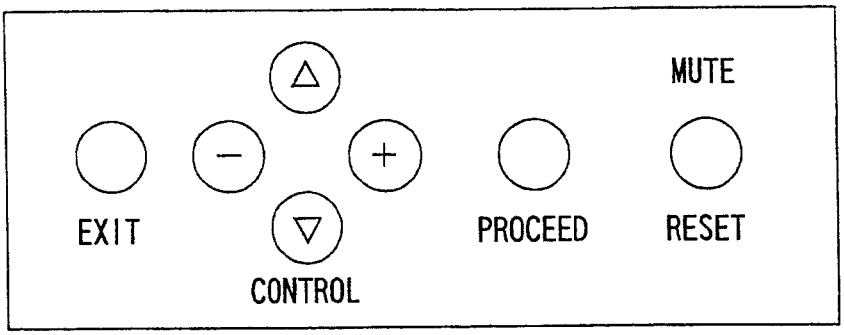


D-SUB 15P



Pin No.	VGA/8514/A Mini D-SUB-15P	Macintosh Ⅱ with Adapter D-SUB-15P
1	RED	GROUND
2	GREEN	RED
3	BLUE	H/V COMP.SYNC.
4	GROUND	SENSE 0
5	GROUND	GREEN
6	GROUND	GROUND
7	GROUND	SENSE 1
8	GROUND	NC
9	NC	BLUE
10	GROUND	SENSE 2
11	GROUND	GROUND
12	DDC DATA	NC
13	H.SYNC. , COMP.SYNC.	GROUND
14	V.SYNC.	GROUND
15	DDC CLOCK	NC

MONITOR ADJUSTMENT CONTROLS

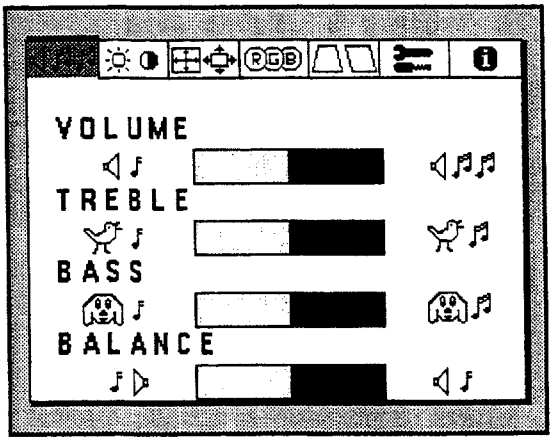


OSM buttons on the front of the monitor function as follows:

	Main menu	Sub menu
EXIT	Exits the OSM Controls.	Exits to the OSM main menu.
CONTROL ▲/▼	Moves the highlighted area up/down to select one of the controls.	Moves the highlighted area up/down to select one of the controls.
CONTROL +/−	Moves the highlighted area left/right to select direction one of the controls.	Moves the bar in the + or - direction to increase or decrease the adjustment.
PROCEED	Has no function	Only executes control or enters sub, sub-menu
RESET/ MUTE	Resets all the controls within the highlighted menu to the factory setting.	Resets the highlighted control to the factory setting.

NOTE: When RESET is pressed in the main and sub-menu, a warning window will appear allowing you to cancel the reset function.

NOTE ON MUTE BUTTON: OSM does not need to be activated to operate the mute function for the speakers. To quickly turn off the sound of the speaker, simply press the MUTE button. To disable the mute function and restore the sound, press the MUTE button again.



OSM Elements: On-Screen Manager windows typically have the following elements:

Highlight: Indicates the selected menu or control in green.Inactive tab is indicated in yellow.

Scroll Bar: Indicates direction of adjustment.

Accessing OSM

Press any of the CONTROL buttons +/-, ▲/▼ or the PROCEED or EXIT button to view the current settings.

Turning off OSM

When in the main menu: Press the EXIT button.

When in the sub-menu: Press the EXIT button twice.

When in the sub, sub-menu: Press the EXIT button three times.

OSM Menus

Main Menu

OSM's main menu of control icons gives you an overview of the selection of controls available. When OSM is activated, icons are displayed at the top of the menu.

If an arrow button is displayed, (→), it indicates further choices are available.

Use the ▲/▼ CONTROL buttons to scroll through all of the options.

The icons control the following:

Speaker Controls:

Volume: Increases or decreases the volume of speakers.

Treble: Increases or decreases the treble.

Bass: Increases or decreases the bass.

Balance: Adjusts the balance between the right and left speakers.

For additional sound controls, please see the Tools Icon.

Brightness/Contrast Control

Brightness: Adjusts the overall image and background screen brightness.

Contrast: Adjusts the image brightness in relation to the background.

Video Boost: Default is the Off Mode. When activated, brightness and maximizes contrast for optimal viewing of video and television.

Video Boost is positional towards the center of the screen. The size of the window is selectable from 1/4, 1/3, 1/2 and full screen. The window will be active when OSM is exited.

Degauss: Eliminates the build-up of stray magnetic fields which alter the correct scan of the electron beams and affect the purity of the screen colors, focus, and convergence. When activated, your screen image will jump and waver a bit as the screen is demagnetized.

Caution: Please allow a minimum of 20 minutes to elapse between uses of the Degauss function.

Size and Position

Left/Right: Moves the image horizontally (left or right).

Up/Down: Moves the image vertically (up or down).

Narrow/Wide: Increases or decreases the horizontal size of the image.

Tall/Short: Increases or decreases the vertical size of the image.

RGB Color Control/AccuColor

Color Presets 1 through 5, selects the desired color setting. The bar is replaced by the color setting choice from 1 to 5. Each color setting is adjusted at the factory to the stated degree Kelvin. If a setting is adjusted, the name of the setting will change from degree Kelvin to Custom.

Color Gain: Increases or decreases red, green, or blue depending upon which is selected. The change in color will appear on screen and the direction (increase or decrease) will be shown by the bars.

Note on Controls in Color Control Menu:

Exit: Exits to the main menu.

Cursor ▲/▼: Moves the highlighted area up/down to select one of the choices.

Cursor +/-: Moves the bar in the + or - direction to increase or decrease the adjustment or selects the color setting (1 through 5).

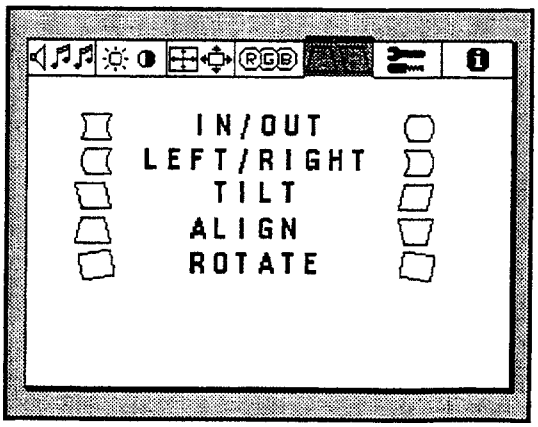
Reset: Resets the current highlighted color setting to the factory setting.

The current color settings on your monitor were determined by focus groups and end users' panels to be the most popular settings for the majority of applications. NEC's Color Control system allows you to change your on-screen colors by adjusting the monitor's red, green ,and blue color guns individually. You can adjust colors to suit your individual needs or preferences. You can also access five industry standard color temperature settings.

Geometry Controls

Geometry Controls Menu

The Geometry controls allow you to adjust the curvature or angle of the sides of your display.



Sides In/Out (pincushion): increases or decreases the curve of the sides either inward or outward.

Sides Left/Right (pincushion balance): increases or decreases the curve of the sides either to the left or right.

Sides Tilt (parallelogram): increases or decreases the tilt of the side either to the left or right.

Sides Align (trapezoidal): increases or decreases the bottom of the screen to be the same as the top.

Rotate (raster rotataion): rotates the entire display clockwise or counter clockwise.

Note on Controls in the Geometry Controls Menu:

Exit: exits to the main menu.

Cursor ▲/▼: moves the highlighted area up/down to select one of the choices.

Cursor +/-: moves the bar in the + or - direction to increase or decrease the adjustment.

RESET: resets the current highlighted control to the factory setting.

Tools

Provides a list of optional adjustments which include the following:

Surround Mode: Provides 4 preset sound settings for various applications.

Voice/Standard Mode: For use with standard applications and telephony functions. This mode is factory preset and will remain as the primary setting unless another sound setting is selected.

Music/Game Mode: Maximizes the treble setting.

Movie/TV Mode: Maximizes the bass setting.

Mono to stereo Mode:Converts the mono input to stereo sound for simulated surround effect.

NOTE: Select desired setting based upon your application.

Language: OSM menus are available in 6 languages.

OSM Position: You can choose where you would like the OSM image to appear on your screen. Selecting OSM location allows you to manually adjust the OSM menu left, right, up, or down.

OSM Turn Off: The OSM menu will stay on as long as it is in use.In the OSM TurnOff sub-menu, you can select how long the monitor waits after the last touch of a button to shut off the OSM menu. The preset choices are 10, 20, 30, 60, 120 seconds.

OSM Lockout

This control completely locks out access to all OSM functions. When attempting to activate OSM while in the lockout mode, a screen will appear indicating that OSM is locked out. To activate the OSM Lockout function, press PROCEED, then "▲" and hold down simultaneously. To de-activate the OSM Lockout, press PROCEED, then "▲" and hold down simultaneously.

Linearity

The Linearity selection allows you to adjust the spacing of the areas on the screen. The purpose of this control is to ensure that a 2-inch circle is a true 2-inch circle wherever it is drawn on the screen. The best way to determine the vertical linearity is as-follows:

·Draw equally spaced horizontal lines using a drawing application that has a ruler.

·Use the Vertical control to adjust the spacing between the lines near the center of your screen.

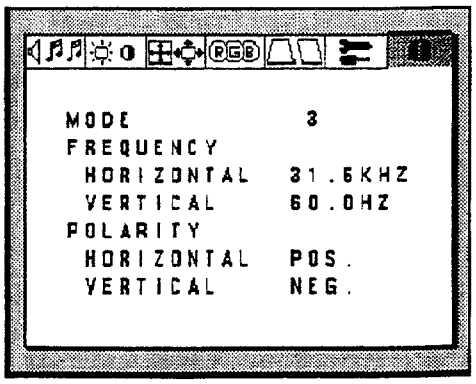
·Use the Vertical Balance control to adjust the lines near the top and bottom of your screen.

Factory Preset

Selecting Factory Preset allows you to reset all OSM settings back to the factory settings. A warning statement will appear to confirm that you to want to reset ALL settings. Individual settings can be reset by highlighting the control to be reset and pressing the RESET button.

Information

Provides you with additional information which includes the following:



Fitness Tips: The Fitness Tips provide you with helpful reminders to periodically rest your eyes. You may select how frequently the reminders are displayed based upon your individual needs. Select an interval form 15, 30, 45, 60, 90, 120 minutes for the tips to appear. When the tips appear, follow the advise of the tips and press EXIT to clear.

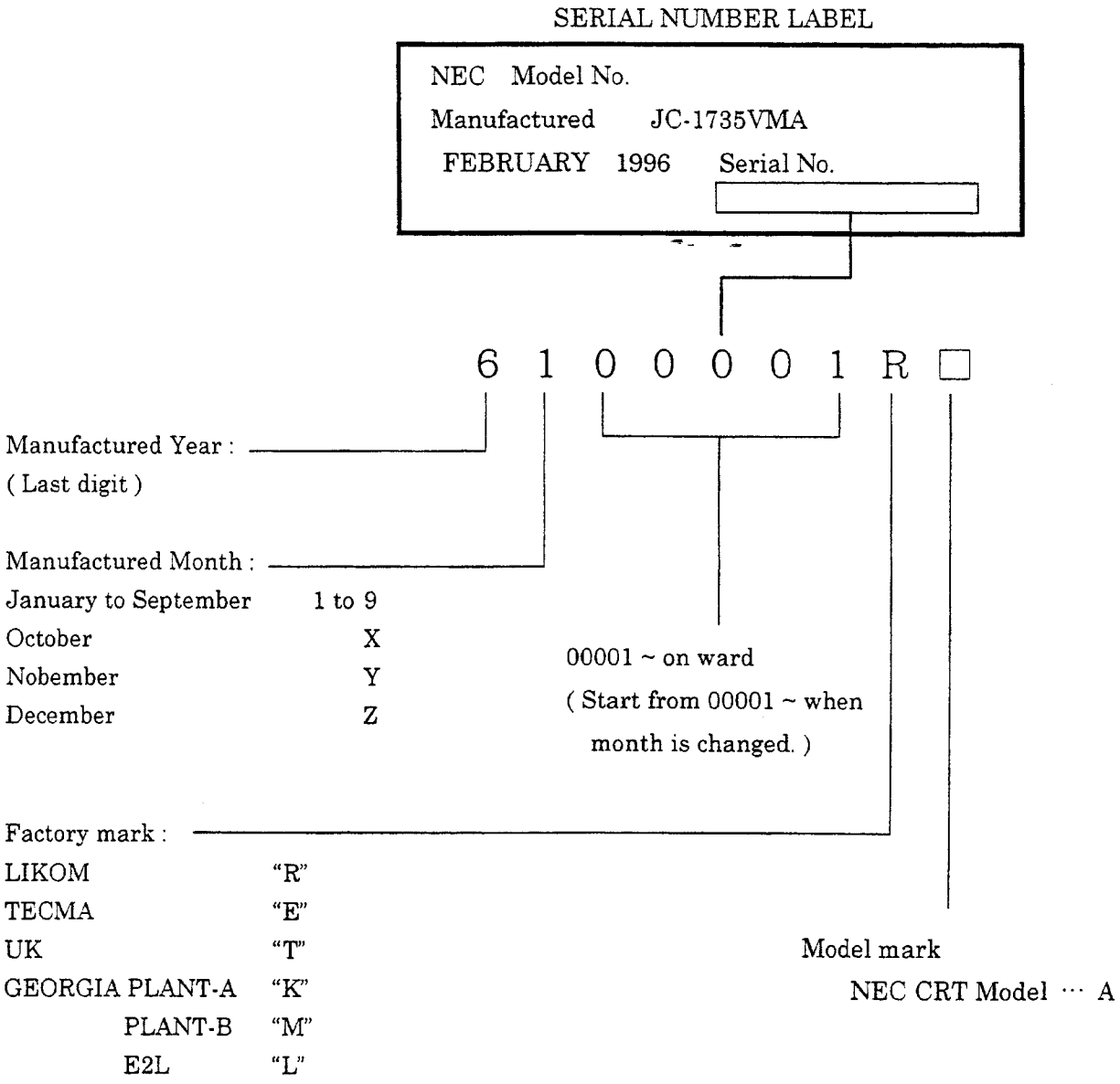
Additinal information: Adjust the monitor height so that the top of the screen is at or slightly below eye level. Position your monitor no closer than 30 cm and no further away than 60 cm from your eyes. The optimal distance is 45cm. Set up your work area to promote a natural and relaxing position. Rest your eyes periodically by focussing on an object at least 6m away blink often. Stretch and walk during frequent short breaks. Relax muscles and joints.

Have regular eye checkups.

Display Mode: Indicates the current mode and frequency setting of the monitor.

SERIAL NUMBER INFORMATION

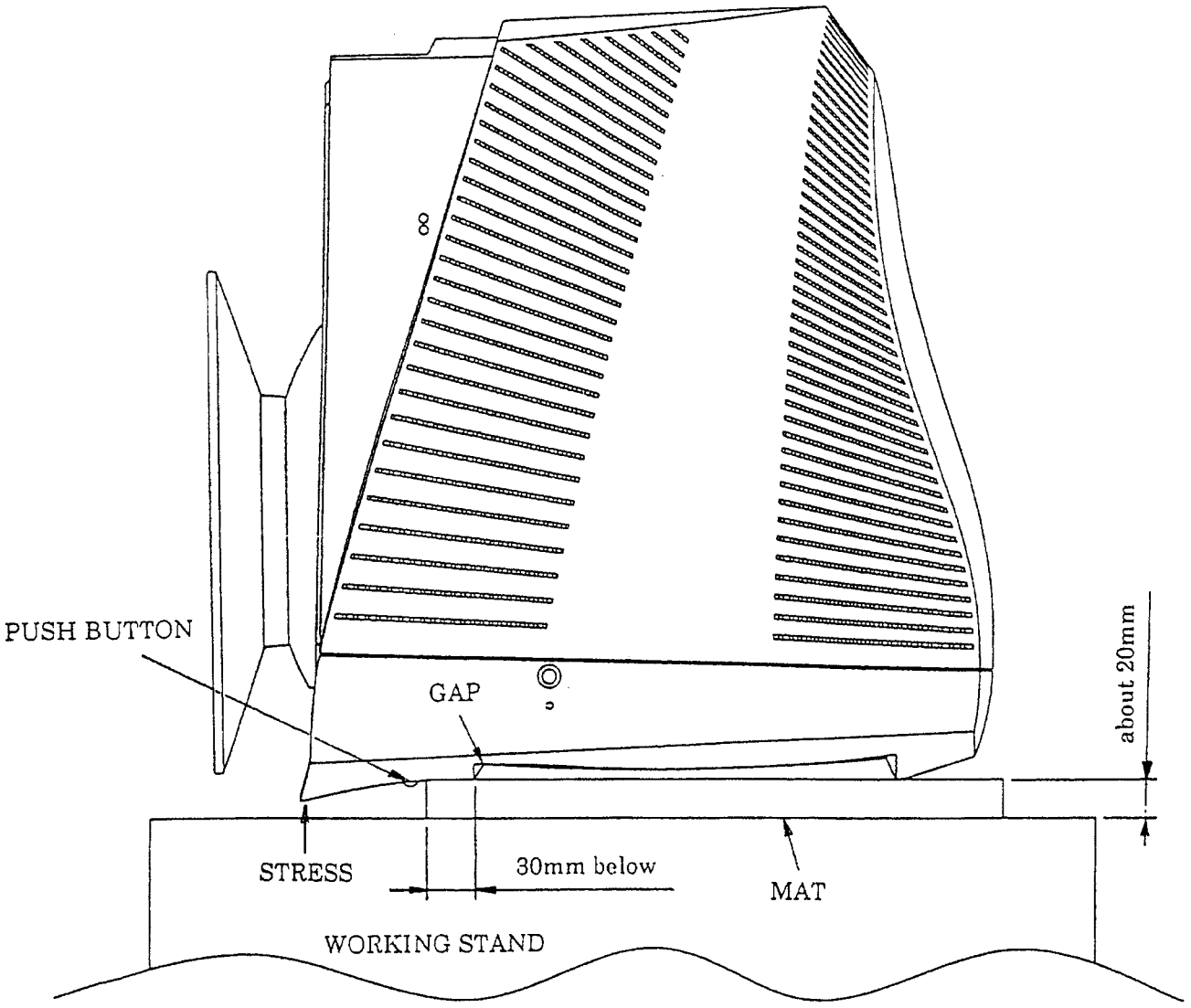
Refer to the serial number information shown below.



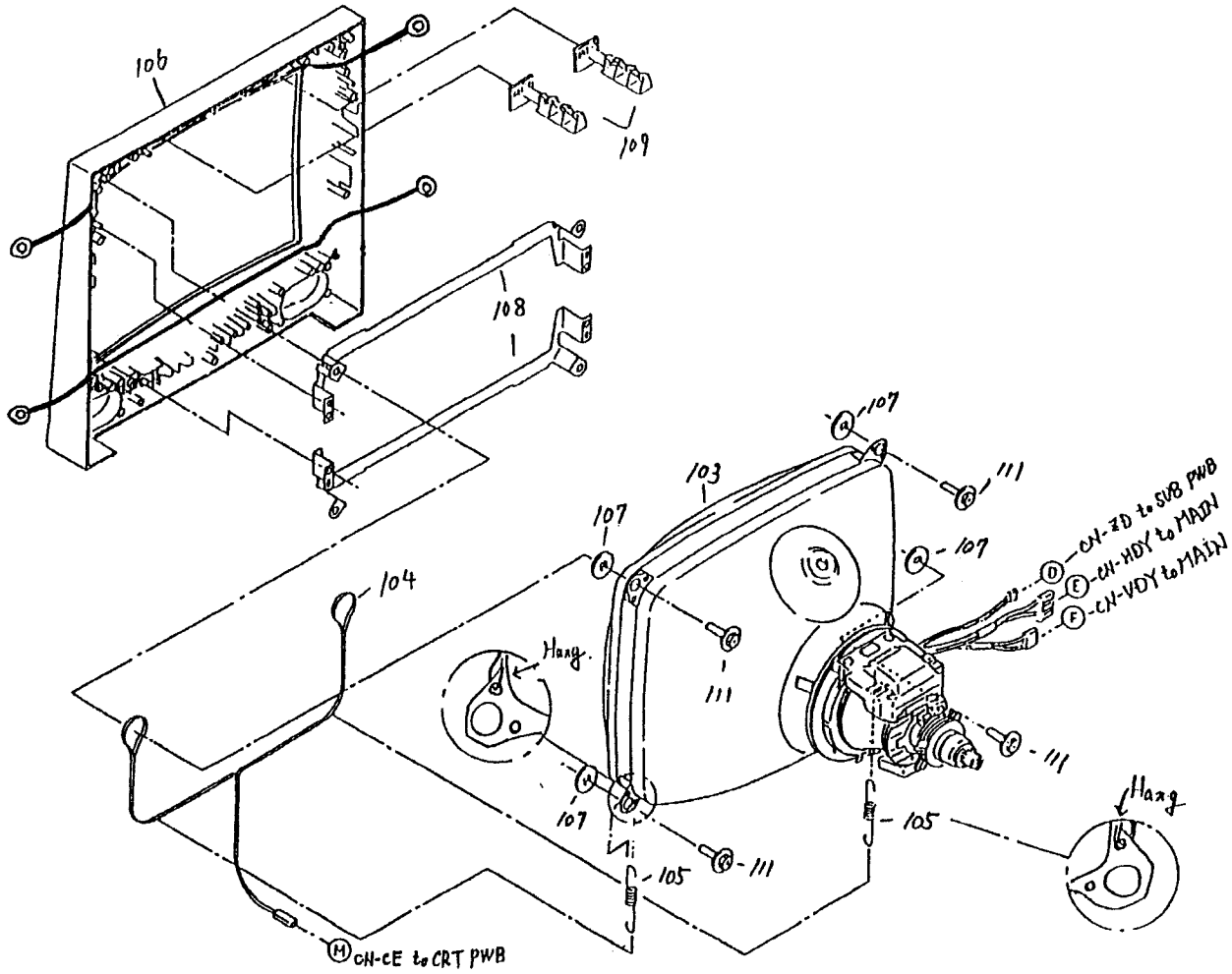
Note : Models JC-1735VMB and JC-1735VMR comply with the above.

ASSEMBLY

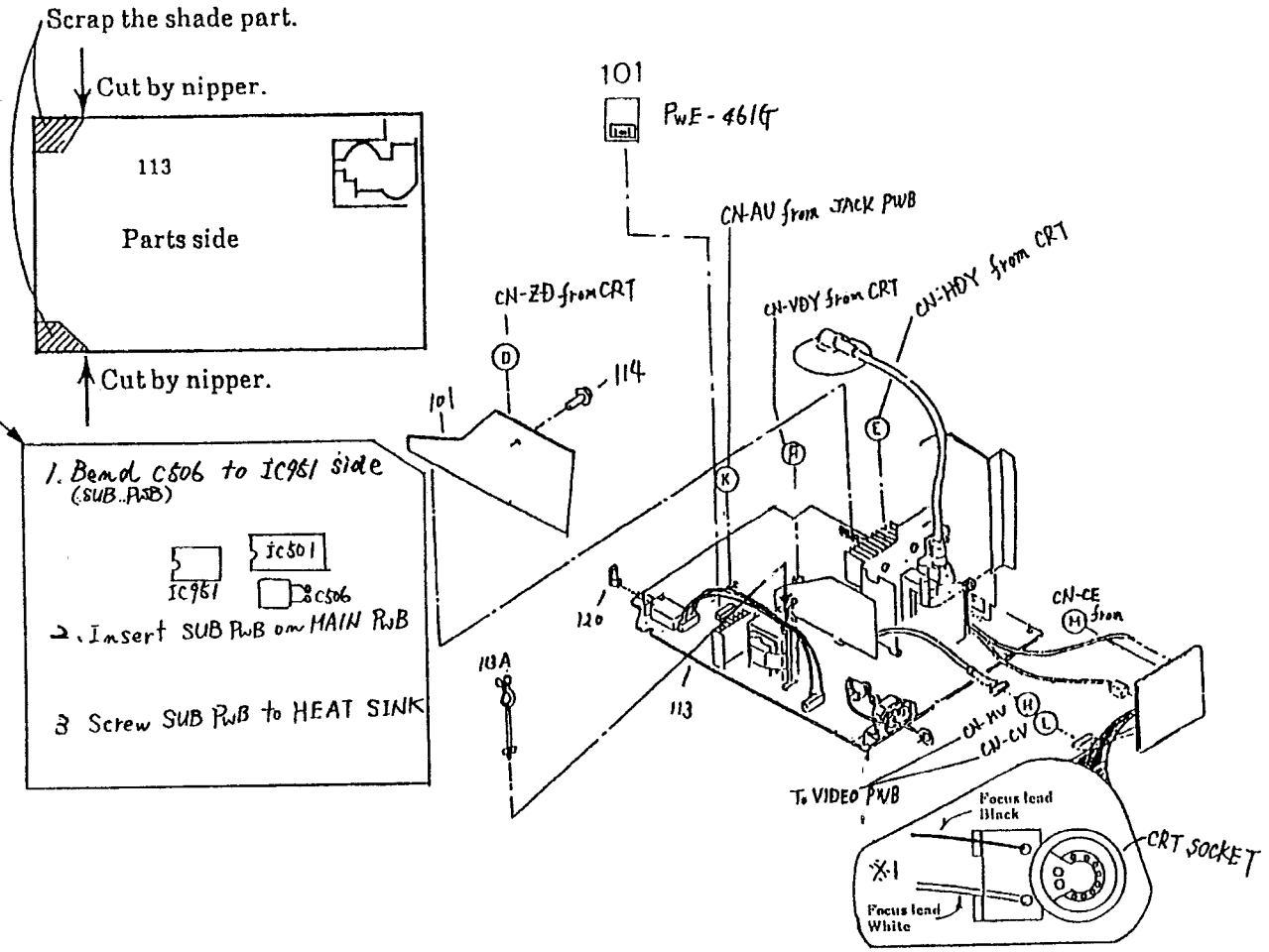
- Before you disassemble the set, turn off power and pull out the power plug.
- Use the appropriate screwdrivers that fits the screws. If you use screwdriver that does not fit, you may break the screws.
- Disassembly is the opposite process of assembly.
- Carefully discharge the CRT anode potential by grounding to coating dag before removing Anode Cap.
- When the lower part of CABINET FRONT is placed on a working table, a gap is created between CABINET FRONT and CRT. Lay a mat on a working table as shown on the diagram below when placing the monitor on its CRT. (Confirm that the push button are not depressed.)



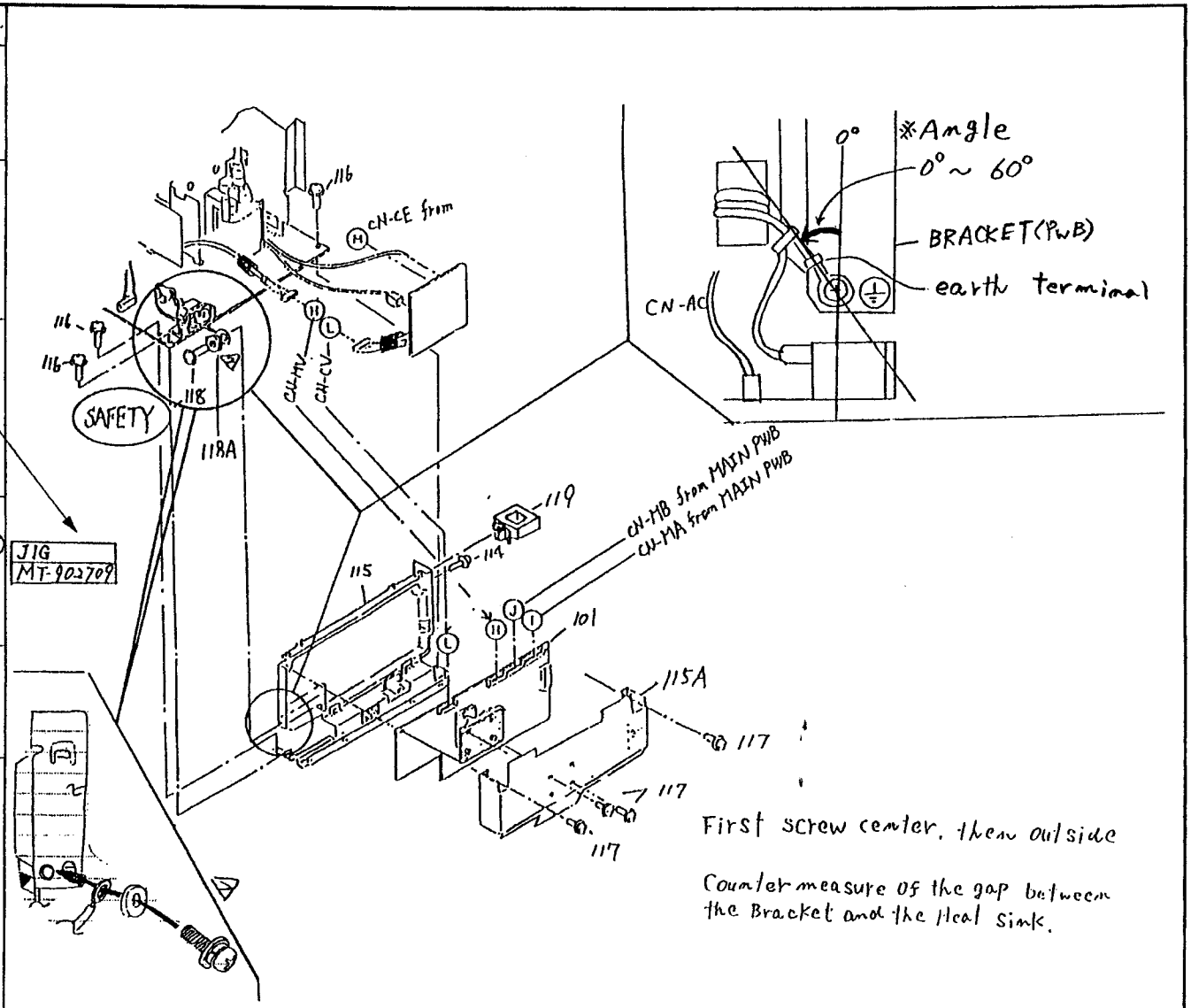
REMARK	SYMBOL
Mount the CRT EARTH WIRE CONNECTOR on the CRT with coil spring.	103 104 105
Place the special washer on the CABINET FRONT ASSY.	
Place the PLATE,SHIELDING (SS1,T) on the CABINET FRONT ASSY.	108
Mount the DEGAUSSING COIL HOLD on the CABINET FRONT ASSY.	109
Screw the CRT on the CABINET FRONT ASSY. Use CRT Positioning JIG ; MT-90274 90275 No.129 Torque ; 40 ±2kgf·cm	111



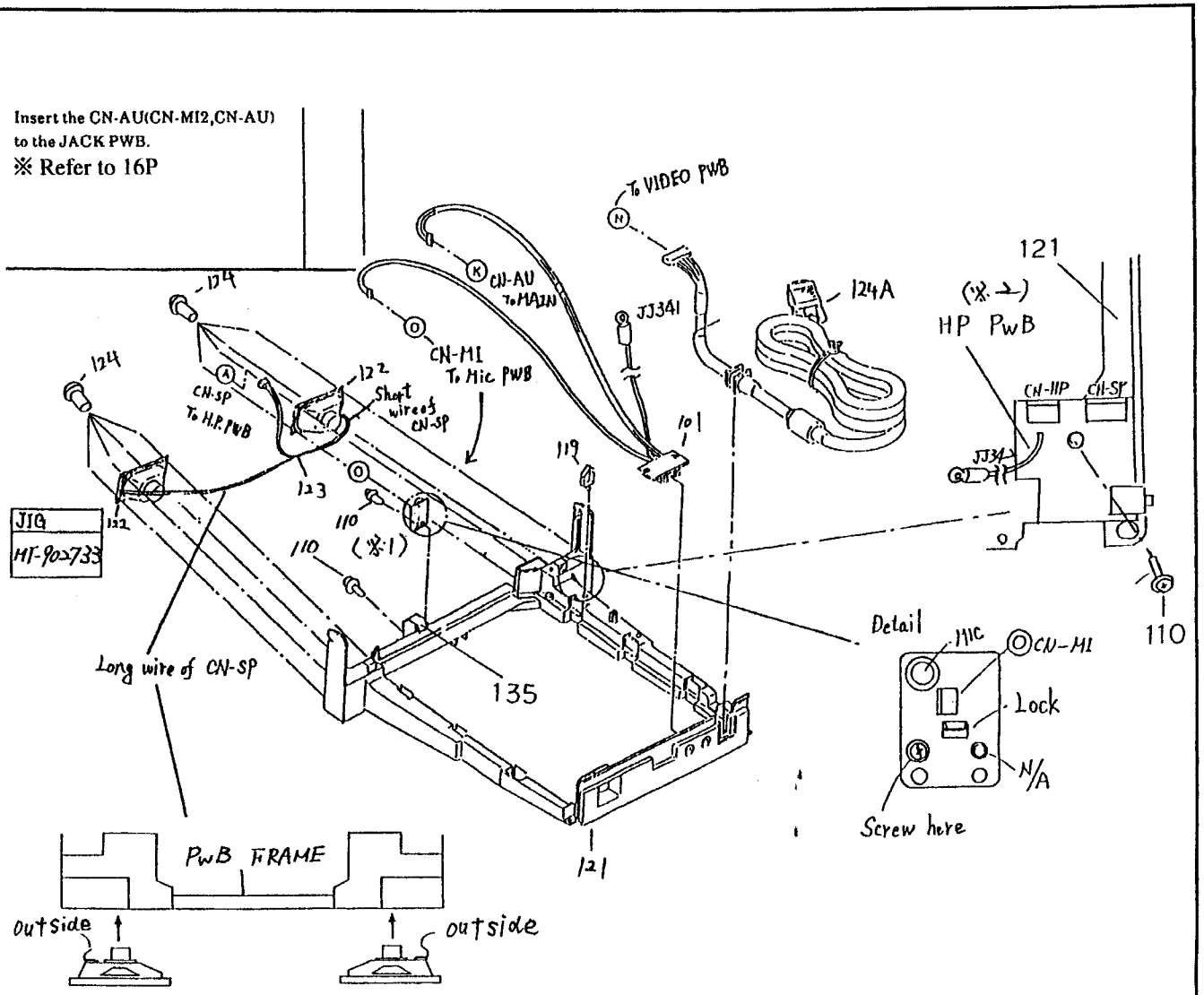
REMARK	SYMBOL
Devide the MAIN PWB ASSY.	113
Insert the Focus lead to the CRT socket	※
Insert the screen lead connector to CN-G2 on the CRT PWB.	
Insert SUB PWB on MAIN PWB. Screw SUB PWB to HEAT SINK No.114 Torque ; 8±1kgf·cm	114 101 ※
Insert the PUSH BUTTON to the SW.	120
Insert the CLAMPER, WIRE on the MAIN PWB ASSY	10A
Insert PwE-461G on MAIN PwB.	101



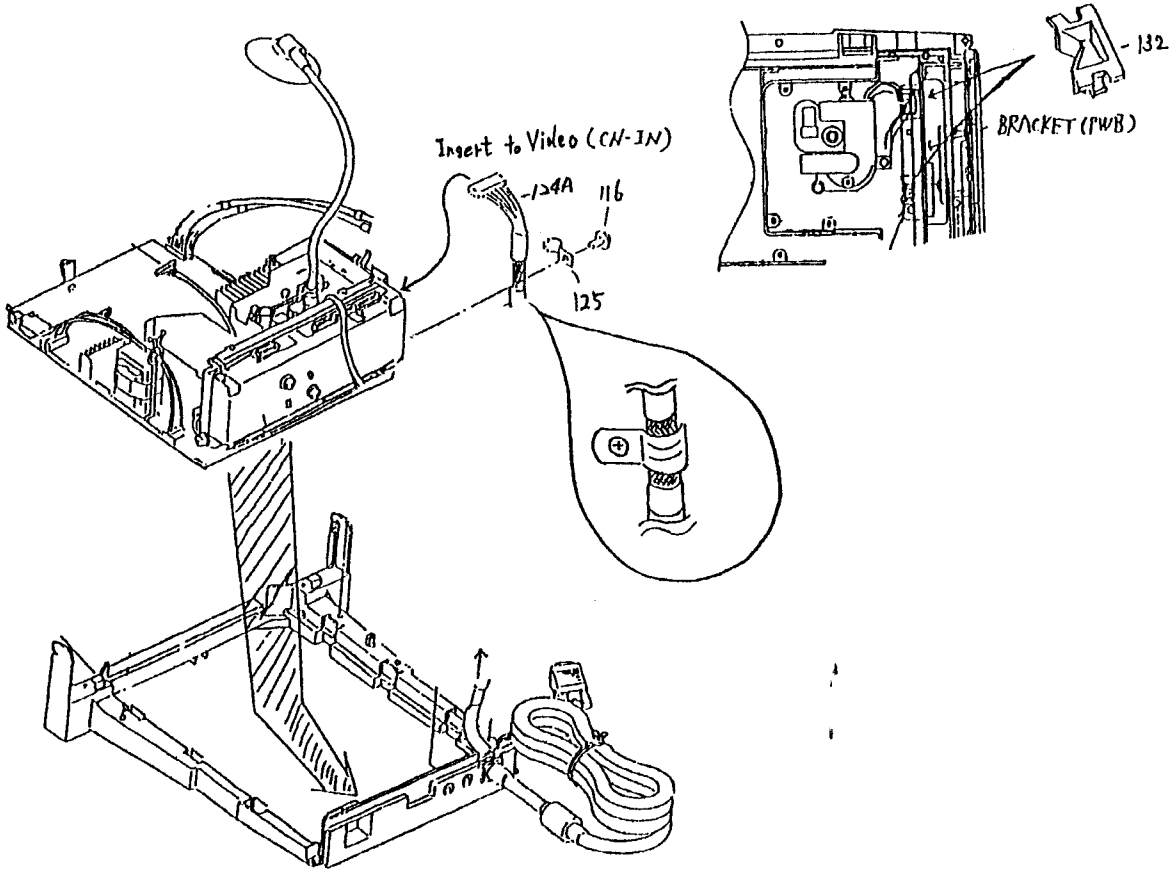
REMARK	SYMBOL
Mount VIDEO PWB on the BRACKET (PWB).	115
Screw the HEAT SINK(VIDEO)B on the VIDEO PWB and BRACKET (PWB). No.117 Torque ; 10±1kgf-cm	117
Screw the BRACKET(PWB) to the MAIN PWB. No.114 Torque ; 8±1kgf-cm No.116 Torque ; 10±1kgf-cm	114 116
Screw the safety earth terminal to the BRACKET(PWB). No.118 Torque; 4.5±1kgf-cm	118 SAFETY 118A
Insert the CLAMPER,WIRE to the BRACKET(PWB).	119



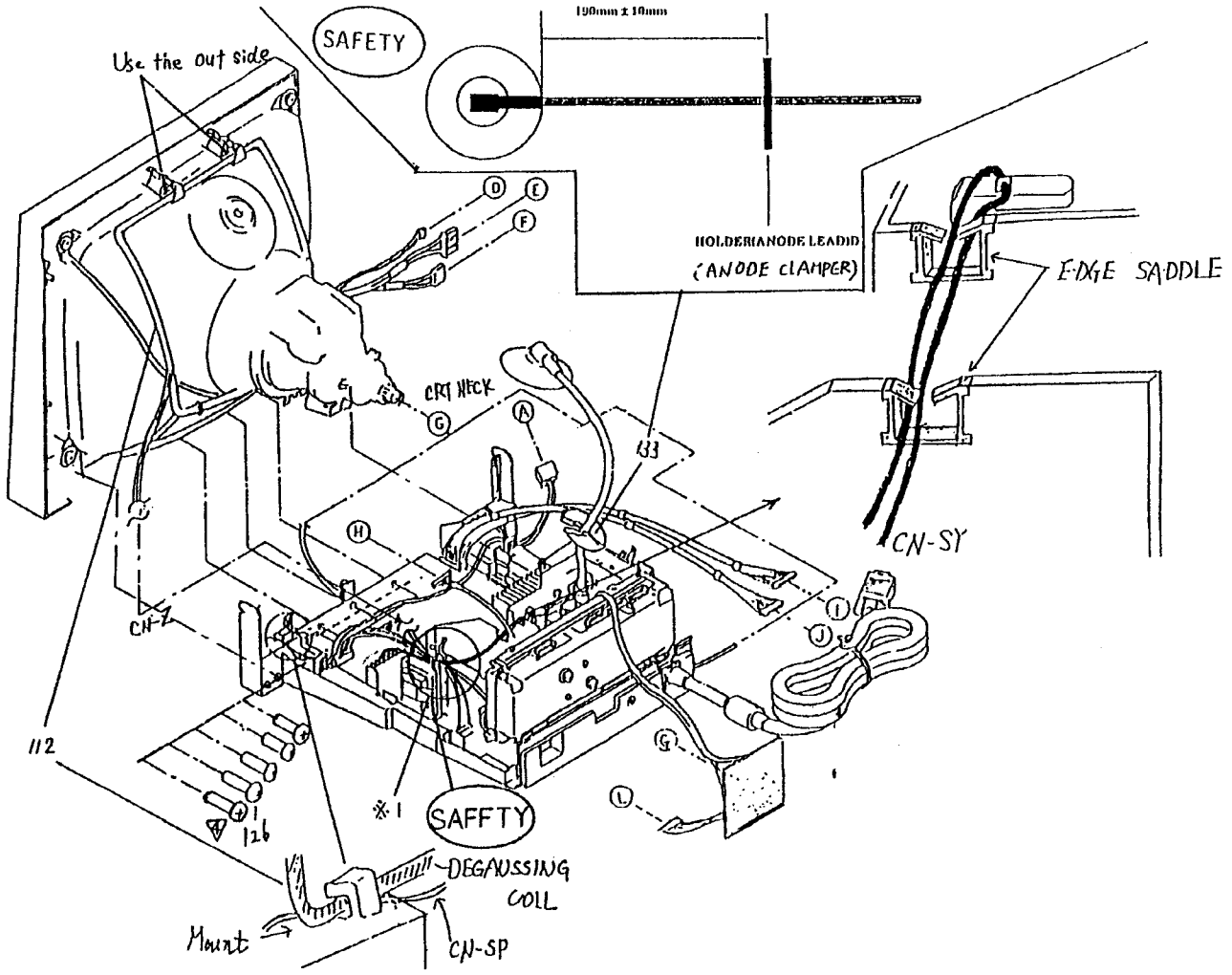
REMARK	SYMBOL
Mount and screw the MIC PWB to the PWB FRAME. (※1) No.110 Torque : 5 ±1kgf·cm	121 110
Insert the CN-SP connector to the SPEAKERS.	122 123
Screw the speakers to the PWB FRAME.. No.124 Torque : 5 ±1kgf·cm	124
Mount the JACK PWB to the FRAME.	
Mount the SIGNAL CABLE to the FRAME.	101
Insert the CLAMPER,WIRE to the FRAME.	119
Mount and screw the HP PwB to the PwB FRAME (※2) No. 110 Torque; 5 ±1kgf.cm	121 110
Mount and screw the LEAF SPRING(FRONT) to the PwB FRAME No.110 Torque; 5±1kgf.cm	135 110



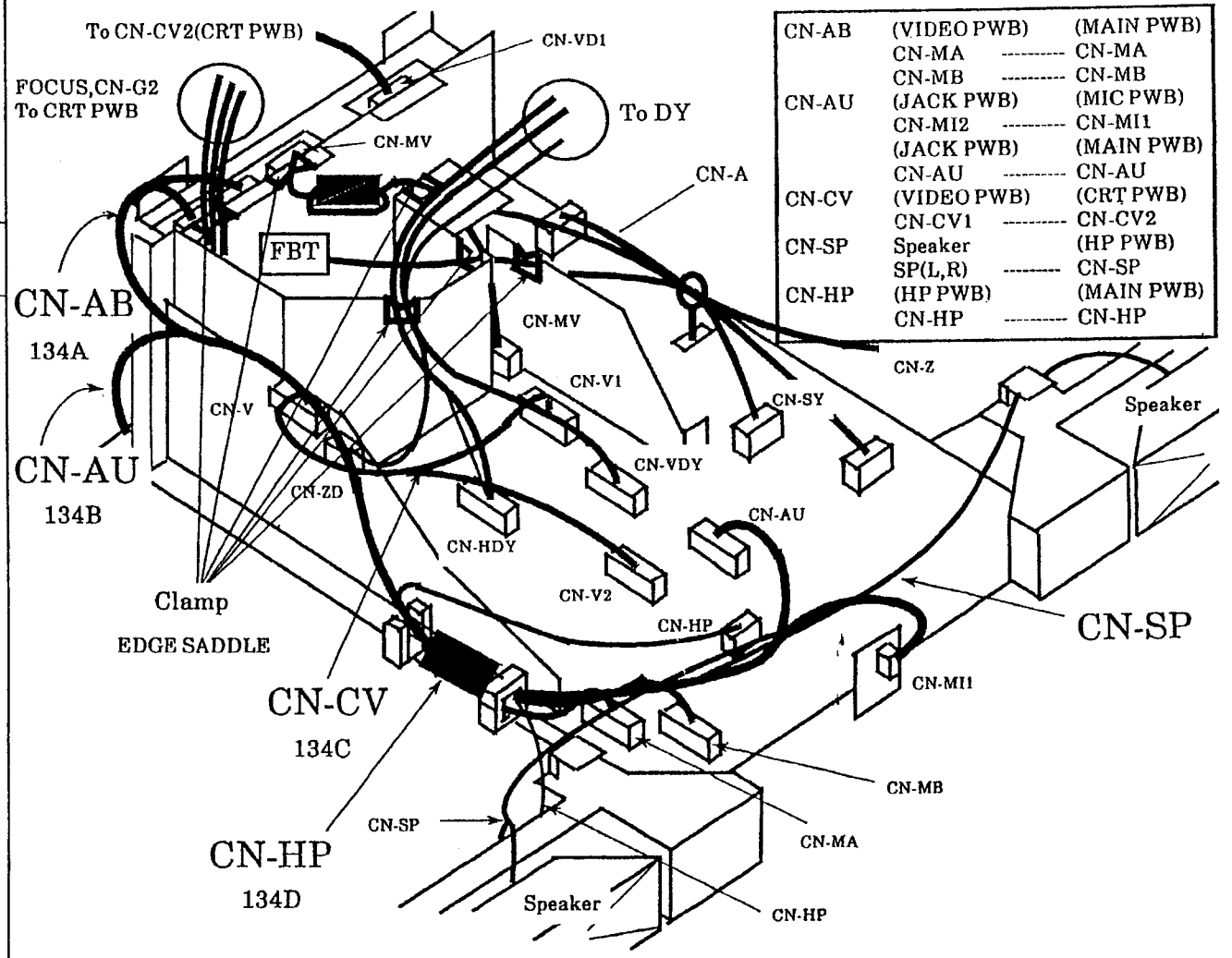
REMARK	SYMBOL
Mount the MAIN PWB to the PWB FRAME.	
Insert the SIGNALCABLE to the VIDEO PWB.	
Clamp the SIGNALCABLE with the clamper on the BRACKET(PWB).	117
Screw the SIGNALCABLE with the BRACKET CORD on the BRACKET (PWB). No.116 Torque ; 10±1kgf·cm	125 116
Dress and clamp WIRES.	
Mount the EDGE SADDLE on the BRACKET(PWB).	132



REMARK	SYMBOL
Mount the DEGAUSSING COIL to the PWB FRAME.	112
Mount and screw the PWB FRAME to the CABINET FRONT. No.126 Torque ; 13±1kgf·cm · Insert CN-SP,HP on the MIC PWB. · Insert CN-HDY,VDY and Z on the MAIN. · Insert CN-ZD on the SUB PWB. CN-SP,HP,HDY,VDY,ZD,Z.	126
Insert the CRT PWB ASSY to the CRT NECK SOCKET. · Insert CN-CV on the CRT PWB. · Insert CN-CE on the CRT PWB.	
Mount the Anode cap on the CRT.	
Mount the Anode clamper to the Anode lead.	133 SAFFTY
Hang the DEGAUSSING COIL on the HOLDER,DEGAUSSING. ※ Use the out side holder.	112
Clamp CN-A, CN-Z and CN-SY	※1 SAFFTY



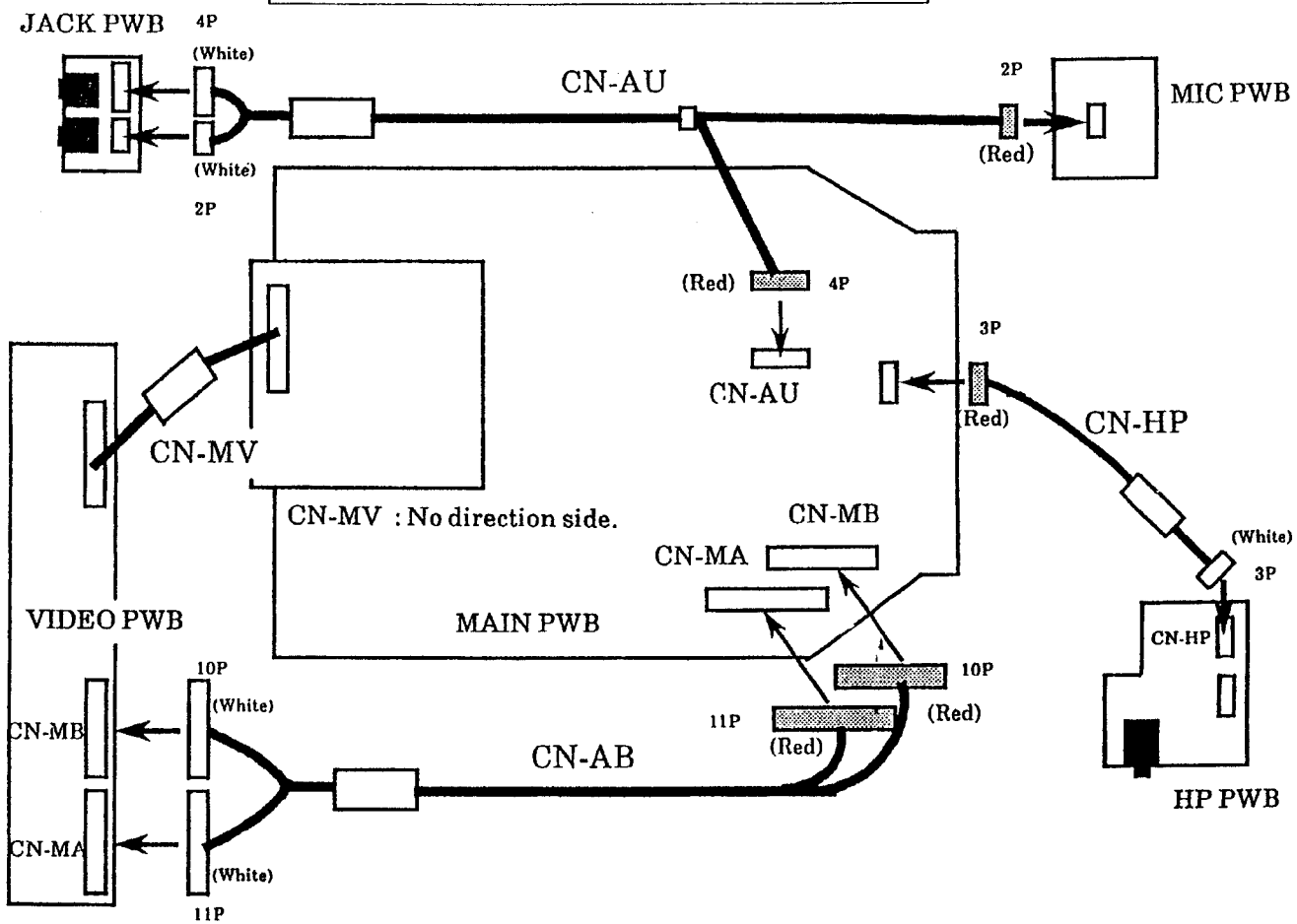
REMARK	SYMBOL
Insert CN-AB,CN-AU,CN-CV , CN-HP and CN-MV ※ Refer to 16P	134A 134B 134C 134D
Dress wire.	



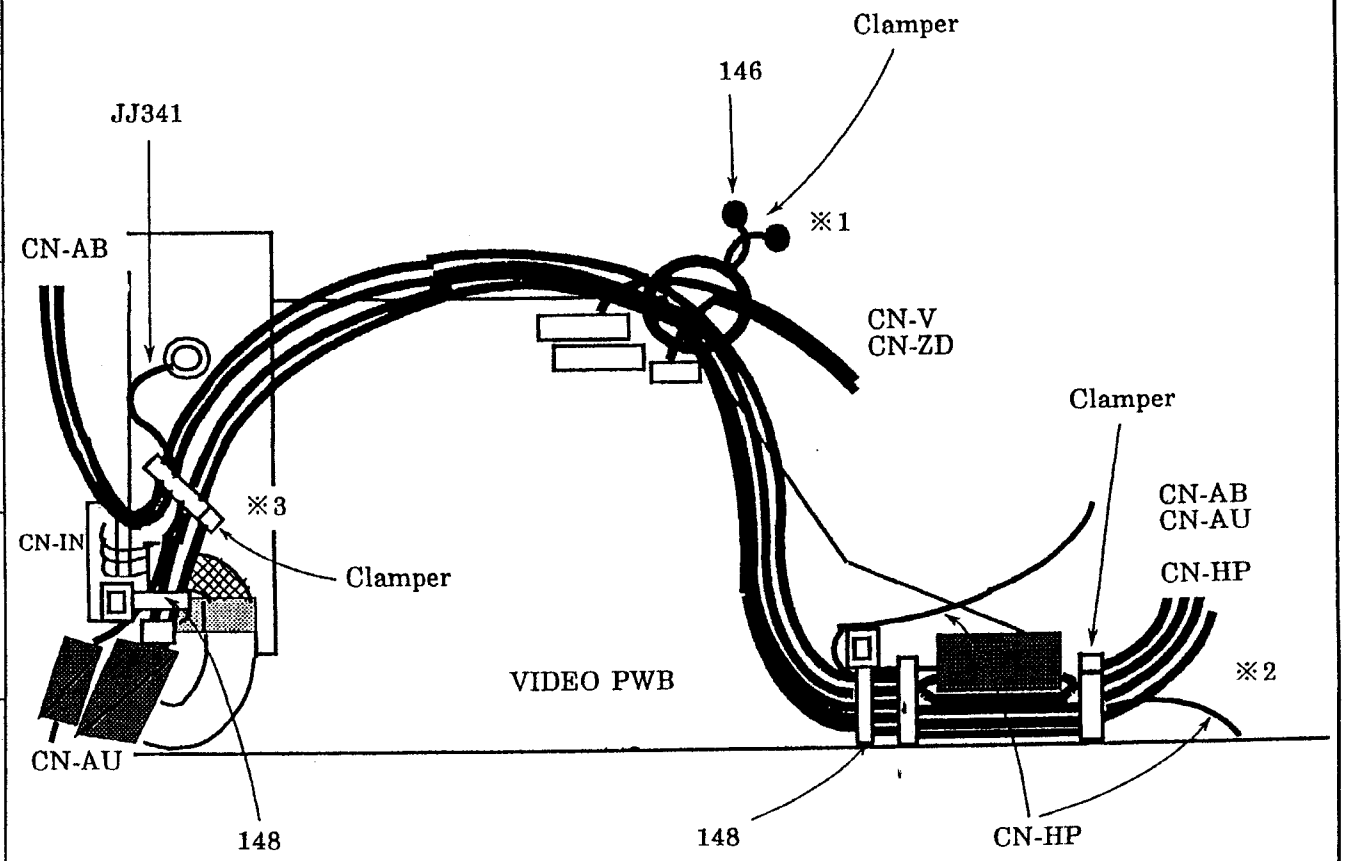
REMARK	SYMBOL

Add this page.

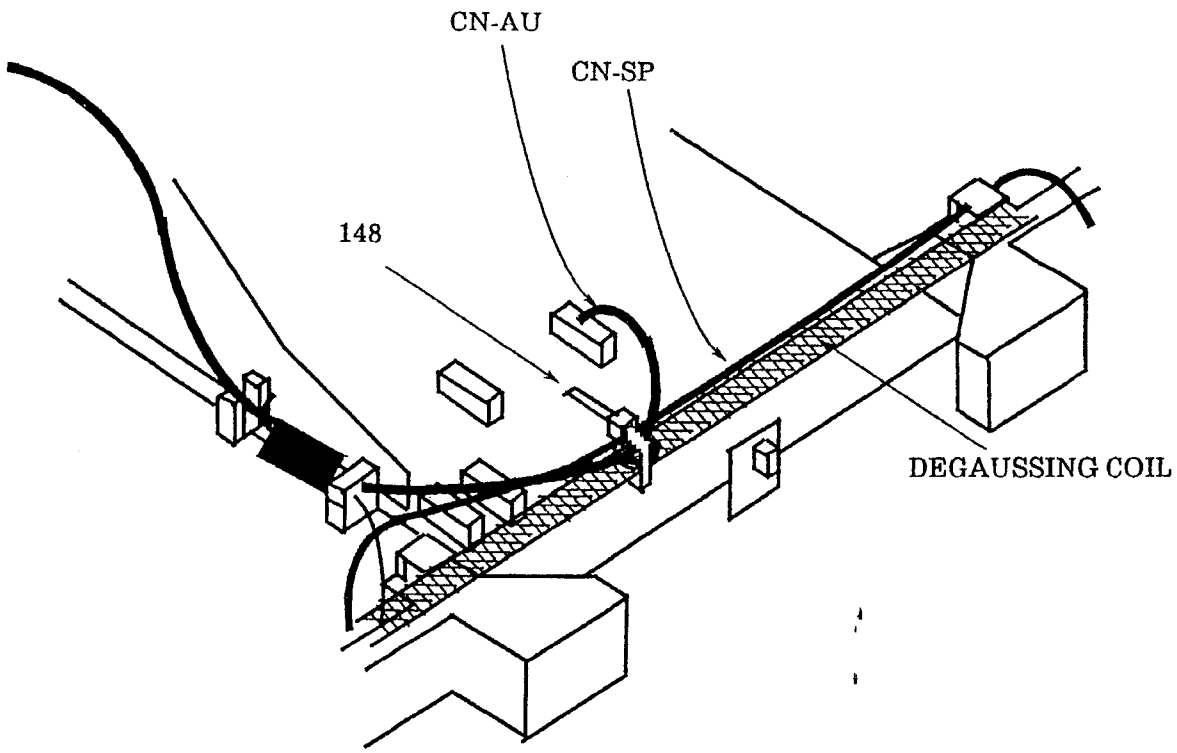
INSERT DIRECTION OF A CONNECTOR.

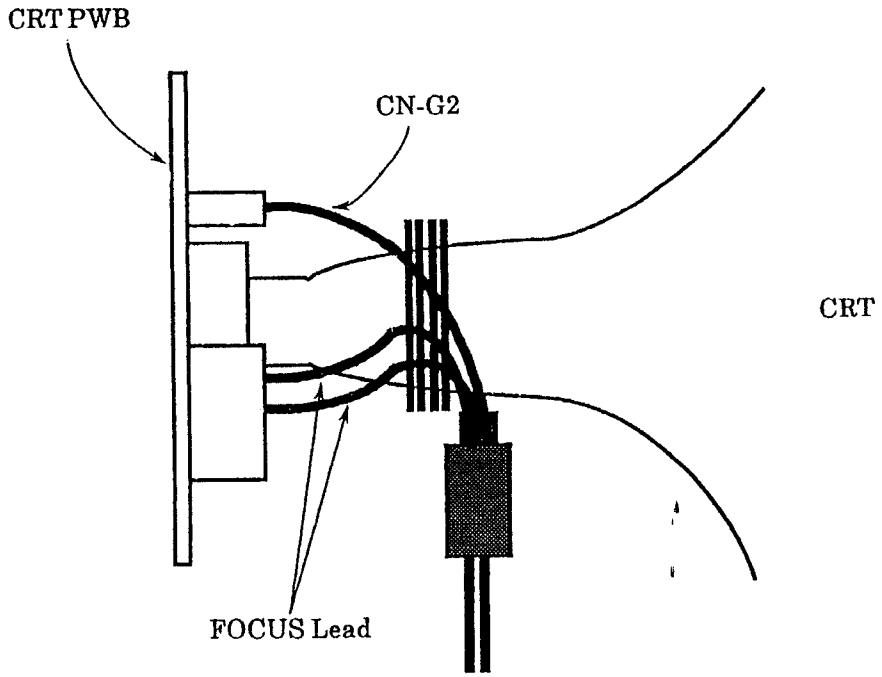


REMARK	SYMBOL
Dress wire.	
Clamp CN-AU,CN-AB,CN-V, CN-ZD and CLAMPER as per sketch	146 ※1
Clamp CN-AU,CN-AB, CN-HP and CLAMPER as per sketch	※2
Clamp CN-AU,CN-AB and JJ341as per sketch	※3
Tie up CN-AB,CN-AU and CN-HP Tie up CN-AU and JJ341	148

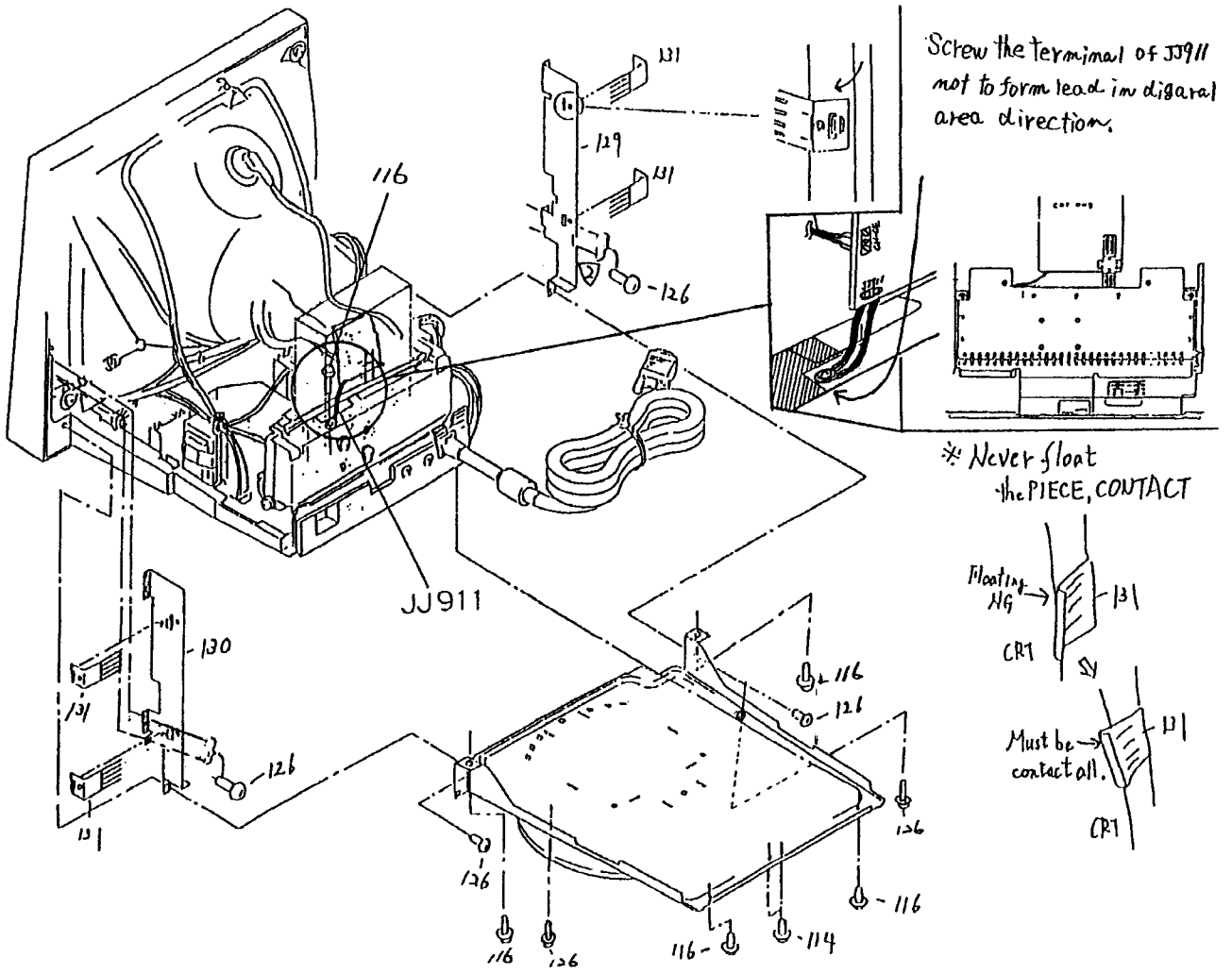


REMARK	SYMBOL
Tie up CN-SP,CN-AU and DEGAUSSING COIL	148

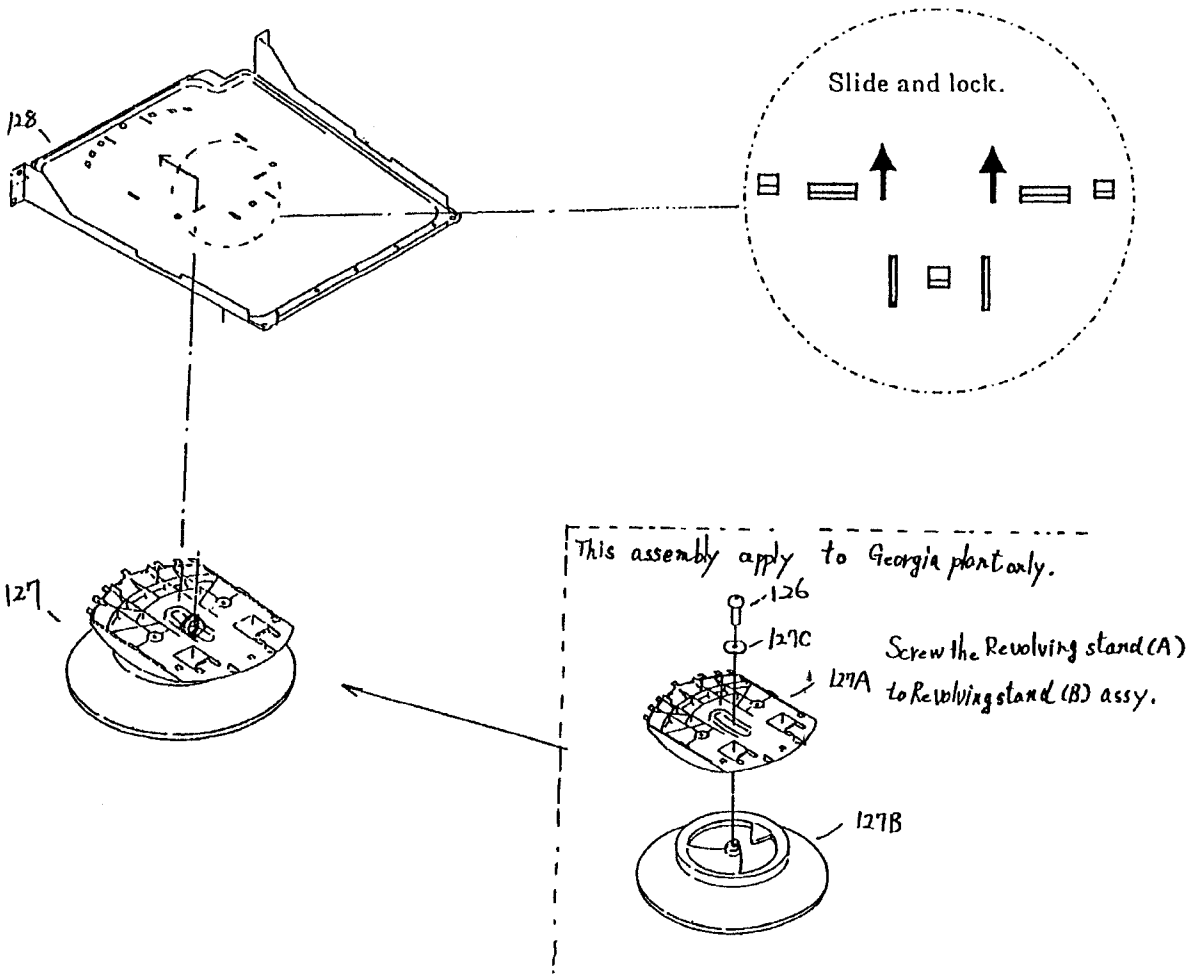


REMARK	SYMBOL	
		※ Dress CN-G2 over the CRT neck 

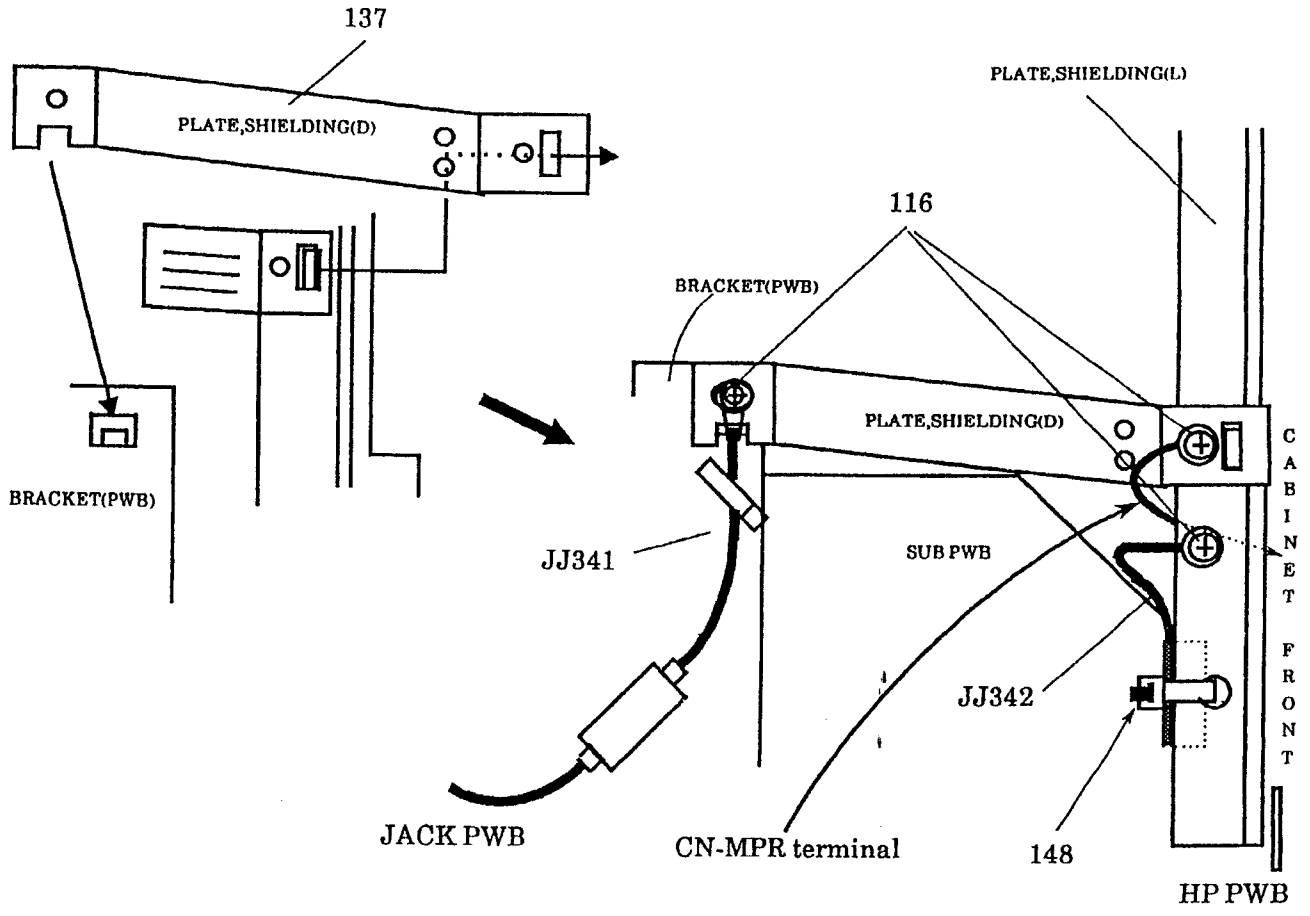
REMARK	SYMBOL
Screw the PLATE,SHIELDING(L),(R). to the CABINET FRONT. No.126 Torque ; 13±1kgf·cm	129 130 126
Screw the CHASSIS BASE ASSY to the CABINET FRONT. No.126 Torque ; 13±1kgf·cm	126
Screw the CHASSIS BASE ASSY to the PWB FRAME. No. 116 Torque ; 10±1kgf·cm 114 Torque ; 8±1kgf·cm	114 116
Mount the PIECE,CONTACT. at the PLATE,SHIELDING(L),(R).	131
Screw the JJ911 terminal the BRACKET (PWB) No 116 Torque : 10±1kgf.cm	116
Screw the CHASSIS BASE ASSY to the PLATE,SHIELDING (L),(R). No. 116 Torque ; 10±1kgf·cm	116
Note Never float the PIECE · CONTACT.	



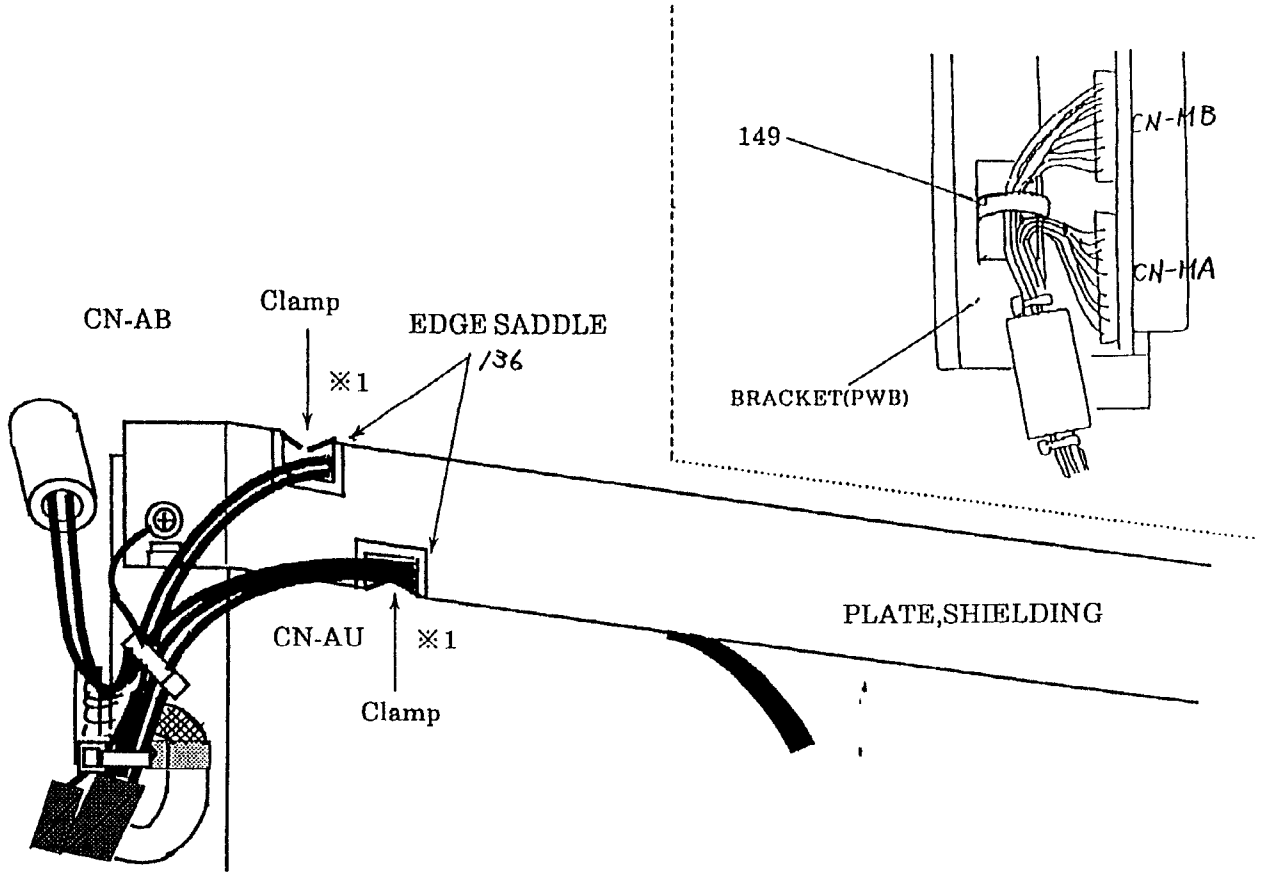
REMARK	SYMBOL
Mount the REVOLVING STAND ASSY to the CHASSIS BASE.	127 128



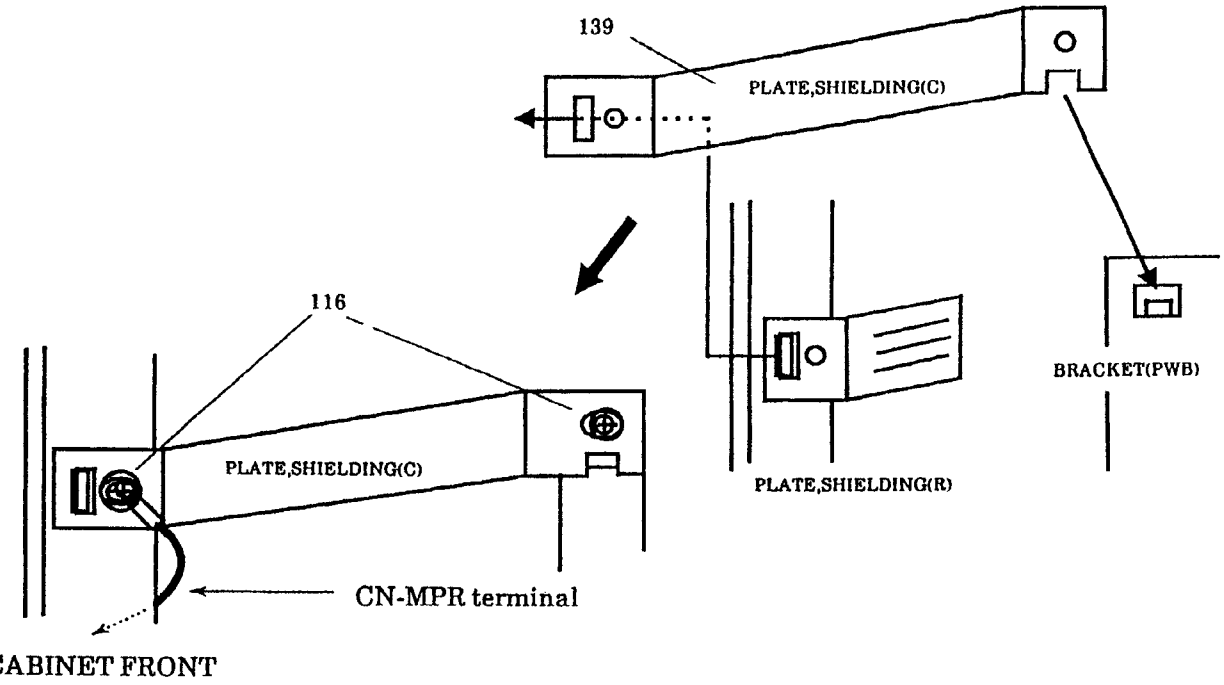
REMARK	SYMBOL
Mount the PLATE,SHIELDING(D) to the PLATE,SHIELDING(L) and BRACKET(PWB).	137
Screw the PLATE,SHIELDING(D) with the terminal from CABINET FRONT to the PLATE,SHIELDING(L). NO.116 Torque ; 10±1kgf·cmm Screw the PLATE,SHIELDING(D) with the terminal from JACK PWB to the BRACKET(PWB). NO.116 Torque ; 10±1kgf·cmm Screw the terminal from HP PWB to the PLATE,SHIELDING(L) NO.116 Torque ; 10±1kgf·cmm	116
Tie up the CORE of JJ342	148



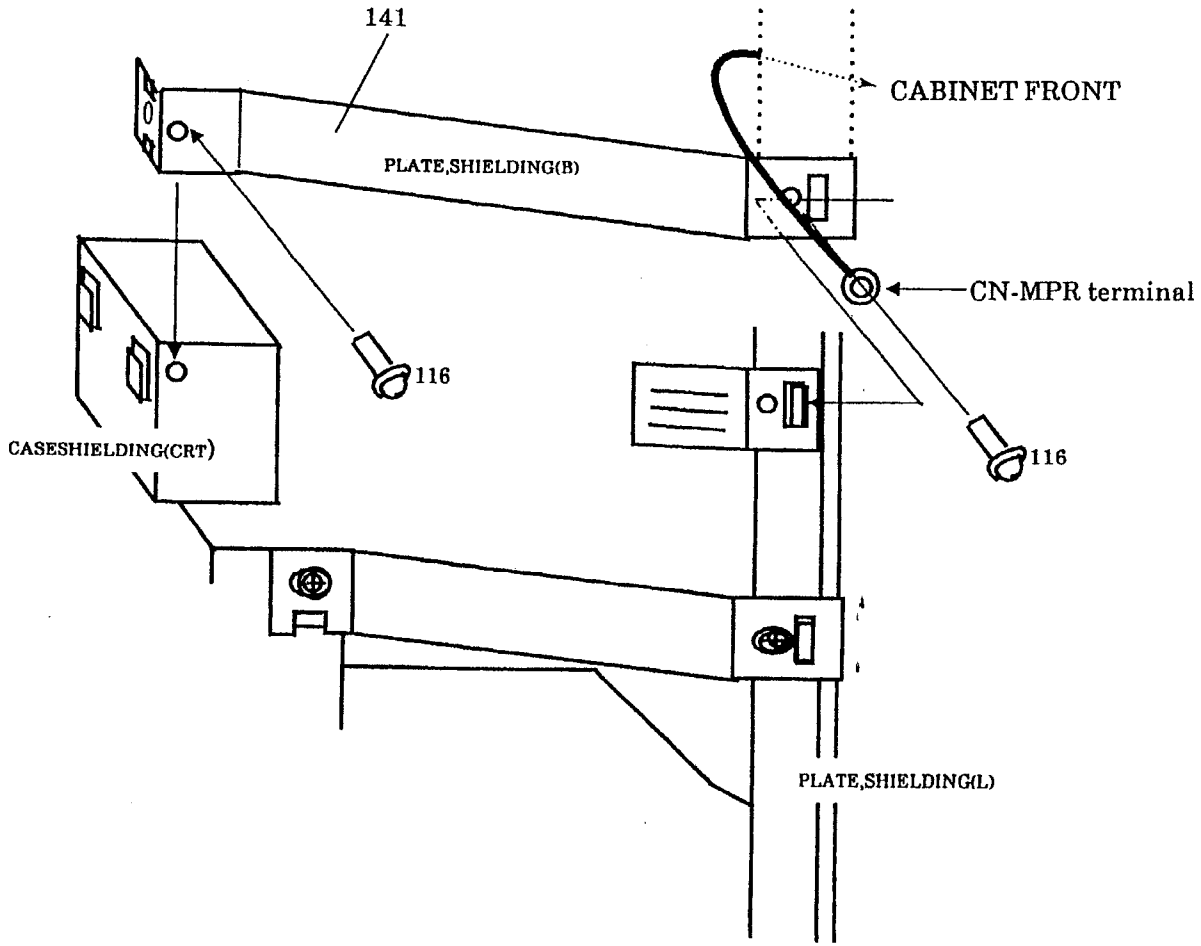
REMARK	SYMBOL
Dress wire.	
Mount the EDGE SADDLE on the PLATE,SHIELDING(D)	136 ※1
Clamp CN-AU,CN-AB as per sketch	※1
1.Attach the CLAMPER,WIRE on the BRACKET(PWB) 2.Clamp the CN-MB	149



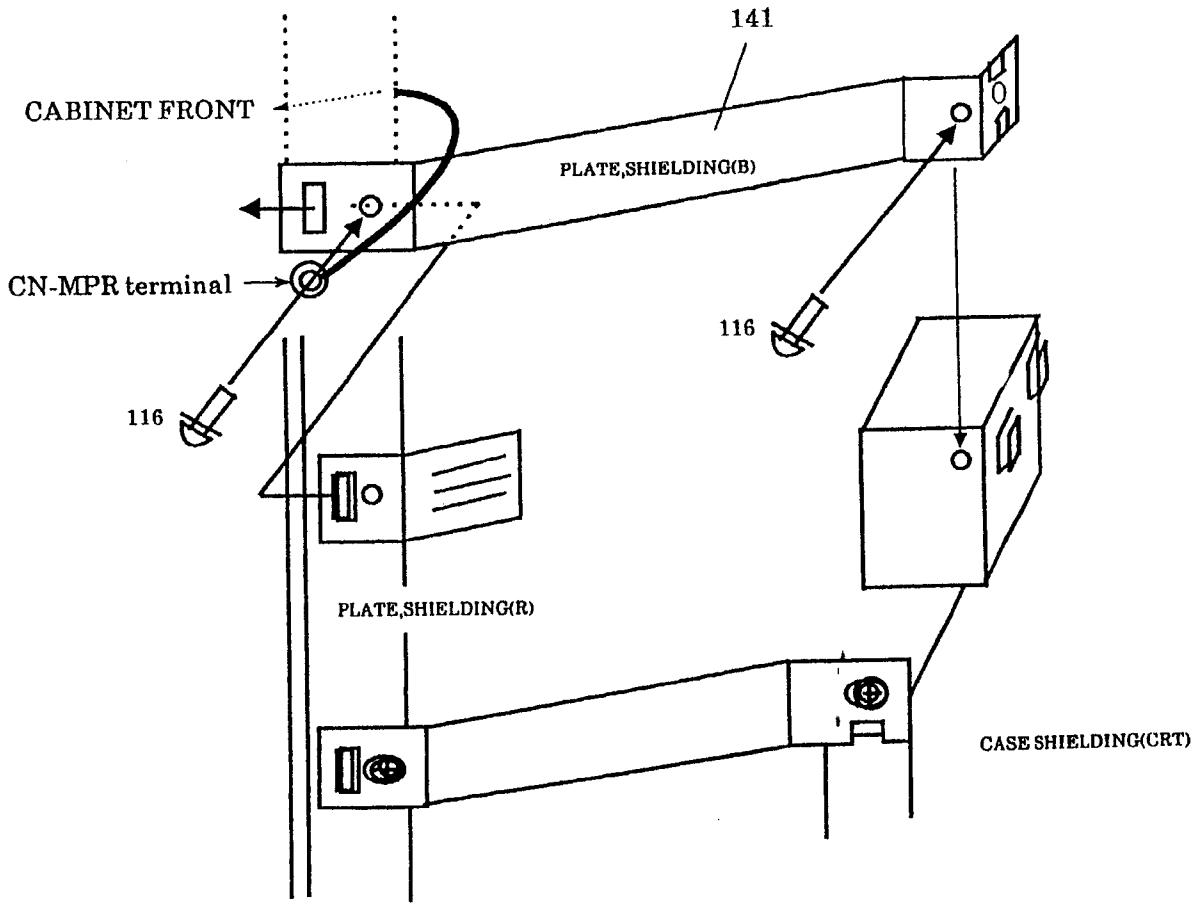
REMARK	SYMBOL	
Mount the PLATE,SHIELDING(C) to the PLATE,SHIELDING(R) and the BRACKET(PWB).	139	
Screw the PLATE,SHIELDING(C)with the terminal from CABINET FRONT to the PLATE,SHIELDING(R). NO.116 Torque ; 10±1kgf·cmm Screw the PLATE,SHIELDING(C) to the BRACKET(PWB). NO.116 Torque ; 10±1kgf·cmm	116	
VISUAL CHECK.		C5H1 and Q5G1 not contacuting with the BRACKET(PWB)



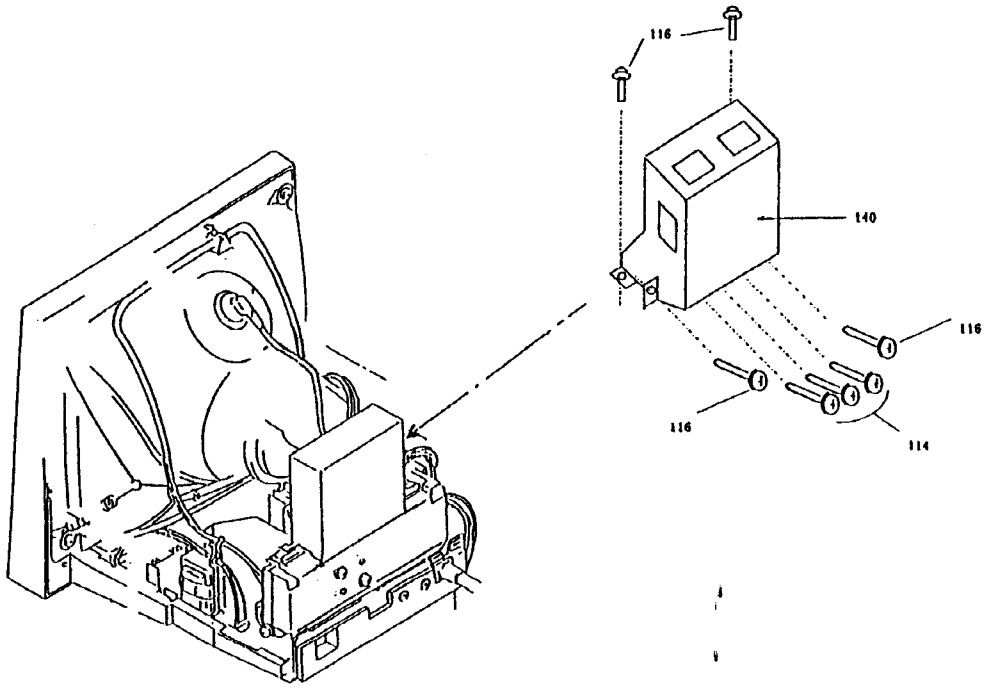
REMARK	SYMBOL
Mount the PLATE,SHIELDING(B) to the PLATE,SHIELDING(L) and CASESHIELDING(CRT).	141
Screw the PLATE,SHIELDING(B)with the terminal from CABINET FRONT to the PLATE,SHIELDING(L) . NO.116 Torque ; 10±1kgf·cm Screw the PLATE,SHIELDING(B) to the CASESHIELDING(CRT). NO.116 Torque ; 10±1kgf·cm	116



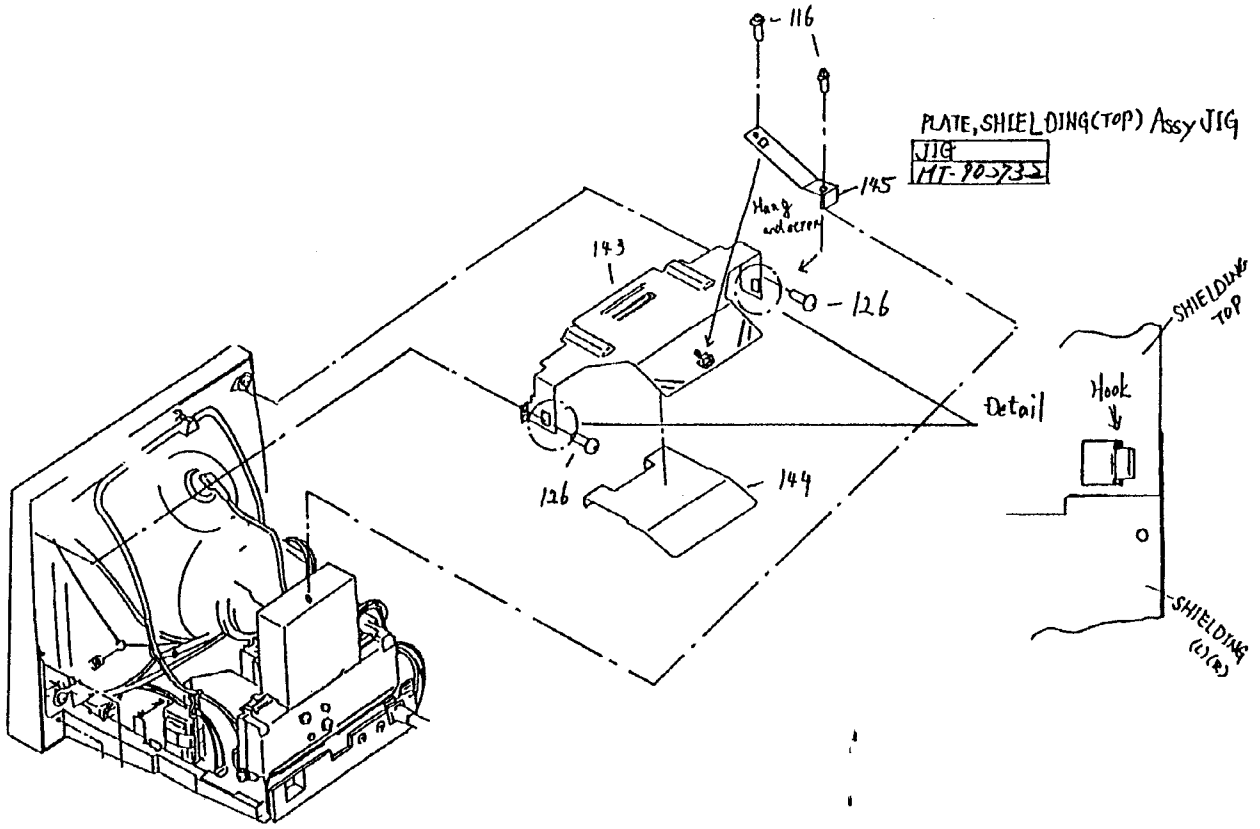
REMARK	SYMBOL
Mount the PLATE,SHIELDING(B) to the PLATE,SHIELDING(R) and CASESHIELDING(CRT).	141
Screw the PLATE,SHIELDING(B)with the terminal from CABINET FRONT to the PLATE,SHIELDING(R). NO.116 Torque ; 10±1kgf·cm Screw the PLATE,SHIELDING(B) to the CASESHIELDING(CRT). NO.116 Torque ; 10±1kgf·cm	116



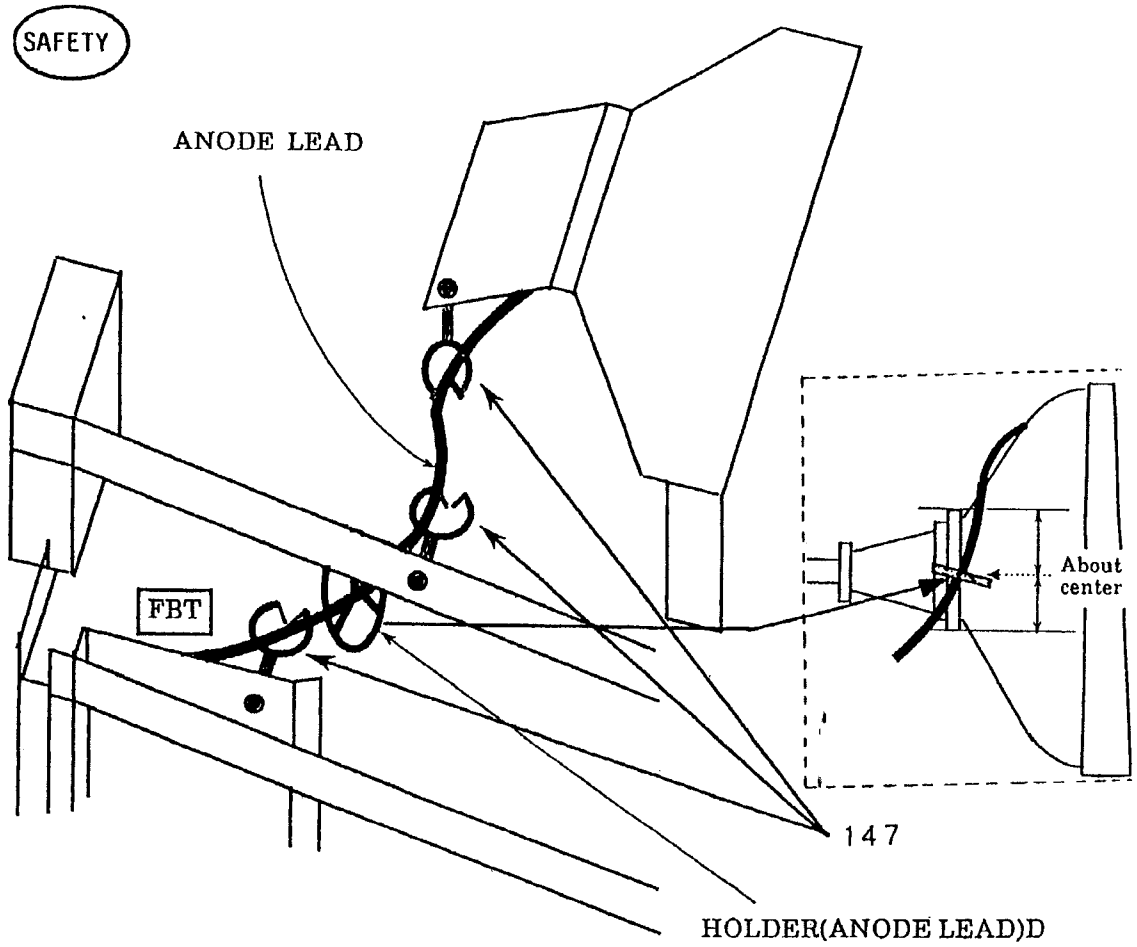
REMARK	SYMBOL
Screw the CASE SHIELDING(CRT) to the BRACKET(PWB). NO.116 Torque ; 10 ± 1kgf-cm	140 116
Screw the CASE SHIELDING(CRT) to the BRACKET(PWB). No. 114 torque ; 8 ± 1kgf-cm	114



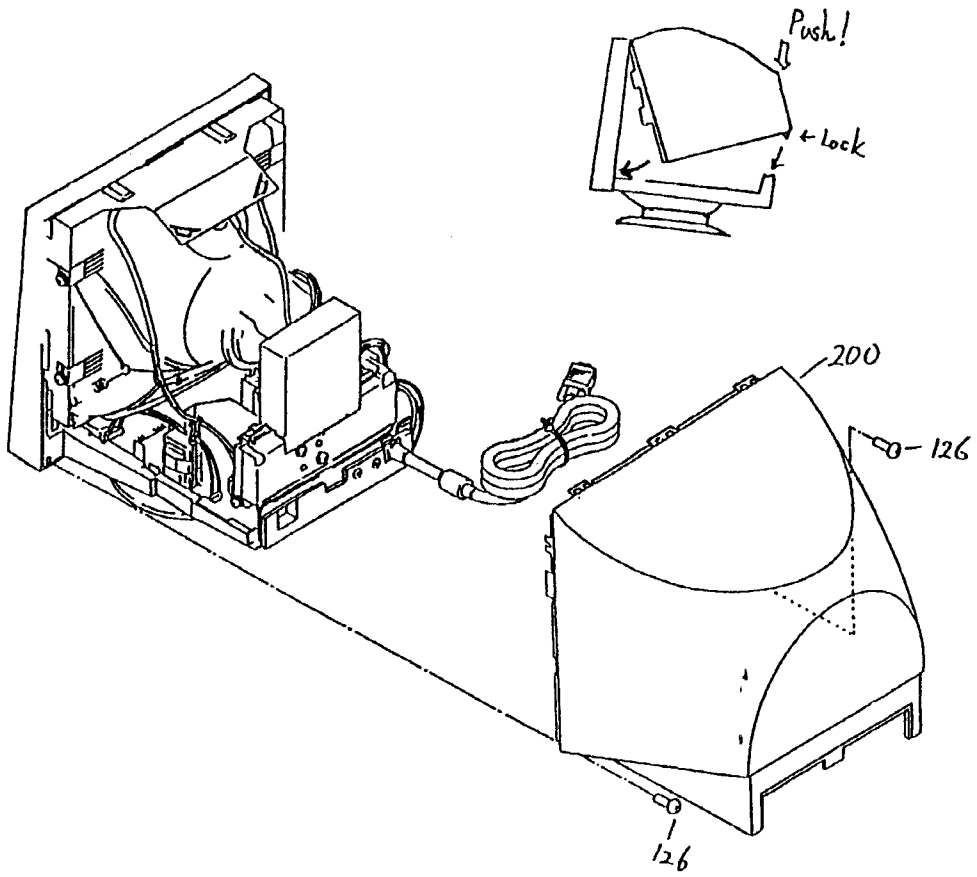
REMARK	SYMBOL
Attach the BARRIER(ANODE) to the PLATE,SHIELDING(TOP).	143 144
Screw the PLATE,SHIELDING(A) to the PLATE,SHIELDING(TOP) and CASE SHIELDING(CRT). NO.138 Torque ; 10 ± 1kgf·cm	145 116
Screw the PLATE,SHIELDING(TOP) to the BRACKET(L)(R). NO.138 Torque ; 10 ± 1kgf·cm	116
Screw the PLATE,SHIELDING(A) to the CASE SHIELDING(CRT). NO.126 Torque ; 13 ± 1kgf·cm	126



REMARK	SYMBOL
Insert the CLAMPER,WIRE and clamp ANODE LEAD	147



REMARK	SYMBOL
Mount and screw the CABINET BACK to the CABINET FRONT. No.126 Torque ; 13±1kgf·cm	200 126



ADJUSTMENT PROCEDURES

Application

These specifications outline the adjustment procedures for Models JC-1735VMA/B/R 17 inch color monitor.

Model Name: JC-1735VMA/B/R

Destination: North America, Europe, Asia, and the Southern Hemisphere Standard Adjustment Conditions

Standard Adjustment Conditions

1. Power Supply Voltage.

   JC-1735VMA: AC 120 V±5% 60Hz

   JC-1735VMB/R: AC 220 V±5% 50Hz

2. Warm Up

   Adjust this monitor after a minimum of thirty minutes to allow unit to reach ambient operating temperature. Factory-mode is defined in items below.

3. Signals

   Video : Analog 0.7±0.01 Vp-p Positive (terminated at 75 ohms ±1%)
   or
   Analog sync on green
   Video 0.7±0.01 Vp-p positive
   Sync 0.3±0.01 Vp-p negative
   (terminated at 75 ohms ±1%)

   Sync : TTL level
   H/V separate, positive / negative
   or
   H/V composite, positive / negative
   or
   sync on green, 0.3±0.01 Vp-p negative
   (terminated at 75 ohms ±1%)

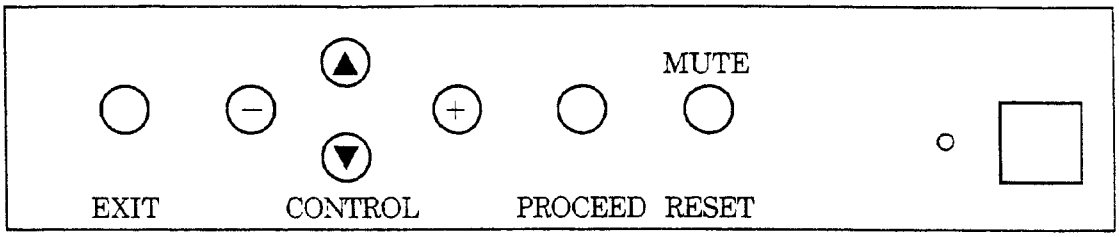
4. Magnetic Fields

	Vertical Magnetic Fields	Horizontal Magnetic Fields
A Version B Version	35±1 μT	30±1 μT
R Version	-40±1 μT	30±1 μT

* Unless instructed otherwise, the CRT face should be facing to the east.
* Degauss the entire unit with an external degaussing coil for the adjustment.

5. OSM Menu Operation

5-1. Front Panel



5-2. OSM Menu

This unit is adjusted in an on screen menu by front panel key operation.

A Menu of on screen has following the two kinds.

(1) Menu (user): This Menu can be operated by the customer.

(2) Menu (service): This Menu is hidden from the customer.

Hereafter, they will be called MENU(U) and MENU(S).

The menu can be displayed when the signal input to the display unit.

5-3. Factory Mode

This unit has the MPU function which is called "Factory Mode".

In factory mode, there are two ON/OFF conditions.

ON: LED color is usually yellow.
Power Management function is non-operational.

OFF: LED color changes by an input condition of the sync signal.
When the sync signal is input to both the horizontal and vertical, LED color is green.

When the signal cable is disconnected from the signal generator, Power Management function operates.

It is not possible to enter MENU(S) by shortcut key.

Usually set the factory mode to the ON condition at adjustment time.
Set the factory mode to OFF at the time of adjustment end.

5-4. Factory Mode Setting

* Opening method of Menu is explained later.

5-4-1. Factory Mode OFF → ON

(1) Open Menu(U),TAB7) "DISPLAY MODE".

(2) Push and hold "RESET" SW and push "▲", "▼" SW at the same time.

(3) A "WARNING" will be displayed, then push "PROCEED" SW once.

(4) LED indicator light turn to Yellow from Green.

5-4-2. Factory Mode ON → OFF

(1) When OSM MENU is displayed, then push "EXIT" SW twice.
Otherwise, push "EXIT" SW once.

(2) A "WARNING" will be displayed, then push "EXIT" SW once.

(3) LED returns to Green.

5-5. Displaying the OSM (Open Menu)

5-5-1. Factory Mode OFF

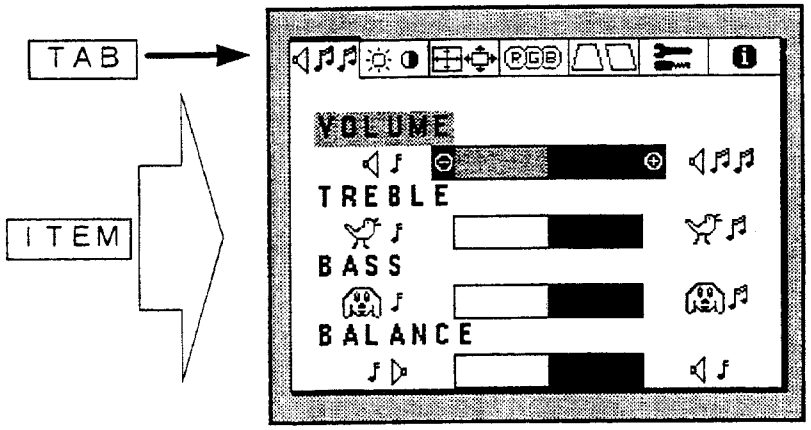
Main Menu(U): Push either switch "EXIT", "+"," -", "▲", "▼" once.

Main Menu(S): Open Menu(U) ,TAB7) "DISPLAY MODE".
Push and hold "RESET" SW and push "▲", "▼" SW at the same time.
A "WARNING" will be displayed, then push "PROCEED" SW once.

5-5-2. Factory Mode ON

Main Menu(U): Push either switch "+", "-", "▲", "▼" once.

Main Menu(S): Push "PROCEED" SW once.



5-6. OSM Turn Off

* To Close the Menu

Push "EXIT" SW while Menu (U) or Menu (S) is displayed

While	TAB is highlighted	:	One time.
	ITEM is highlighted	:	Two times.
	entering SUB MENU	:	Three times.

* To close MENU temporarily.

Push "PROCEED" SW once, while Menu (S) is being displayed.

Push "PROCEED" SW once more, Menu (S) is displayed again.

5-7. TAB, Item, Sub Menu Change

TAB to TAB	:	Push "-" SW or "+" SW.
TAB to item	:	Push "▲" SW or "▼" SW
Item to sub Menu	:	Push "PROCEED" SW once.
Item to item	:	Push "▲" SW or "▼" SW.
Sub Menu to item	:	Push "EXIT" SW once.
Item to TAB	:	When the item is the best step, push "▲" SW. When the item is the lowest step, push "▼" SW. Push "EXIT" all items.

5-8. To change Data Value

Data values are changed by pushing "-" or "+" SW.

5-9. To save Data Value

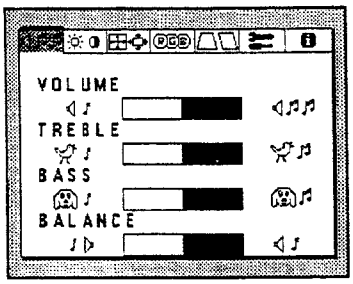
Data values are saved on EEPROM, when highlighted ITEM is changed.

6. Color Analyzer

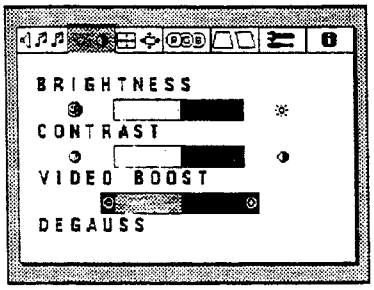
The color analyzer should be CA-100 (made by MINOLTA) or compatible.

7. Structure of OSM Menu (user)

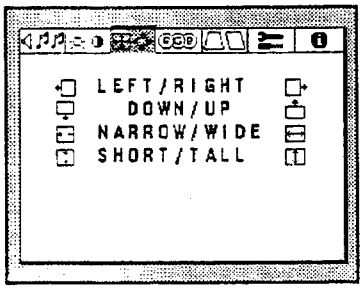
TAB 1) SOUNDS



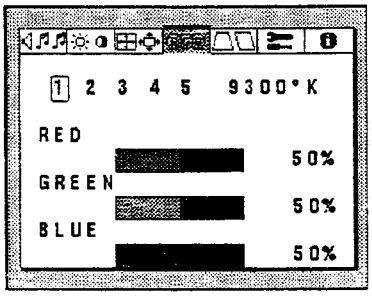
TAB 2) BRIGHTNESS & CONTRAST



TAB 3) POSITION & SIZE

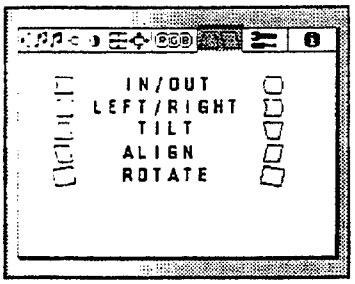


TAB 4) RGB

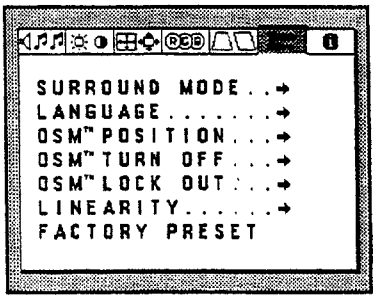


PRESET No.1 (9300° K)
PRESET No.2 (7500° K)
PRESET No.3 (6500° K)
PRESET No.4 (5000° K)
PRESET No.5 (4200° K)

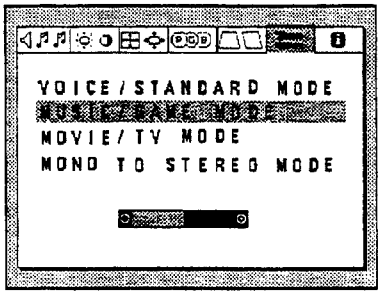
TAB 5) GEOMETRY



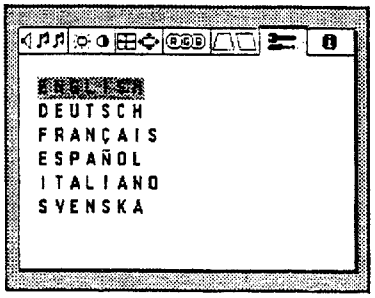
TAB 6) TOOL



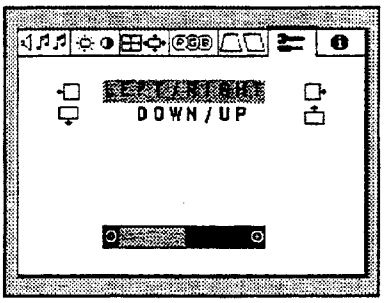
6-1) SURROUND MODE



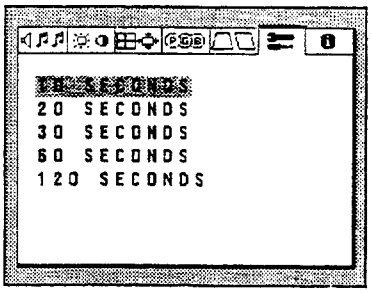
6-2) LANGUAGE



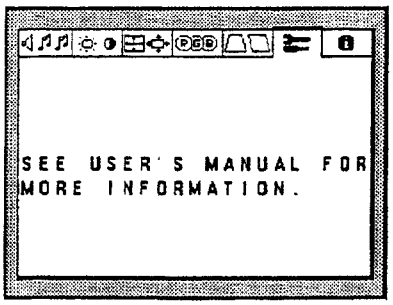
6-3) OSM POSITION



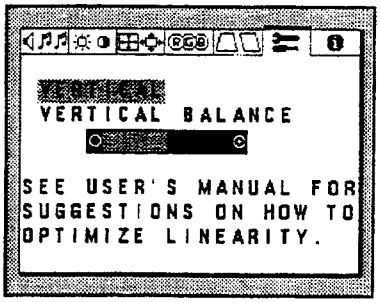
6-4) OSM TURN OFF



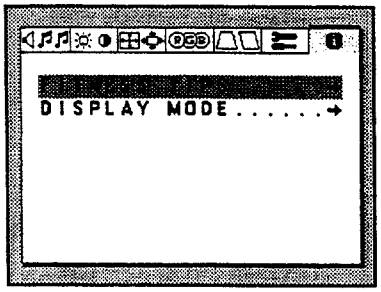
6-5) OSM LOCK OUT



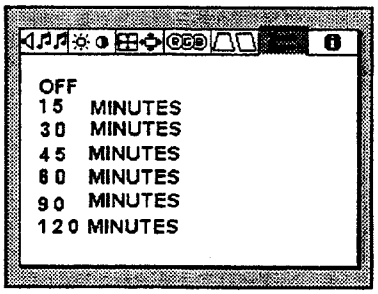
6-6) LINEARITY



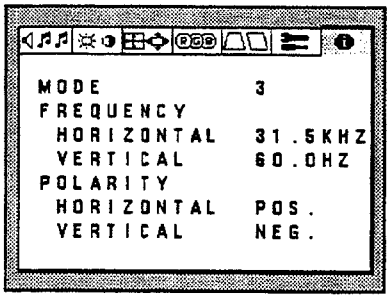
TAB 7) INFORMATION



7-1) FITNESS TIPS

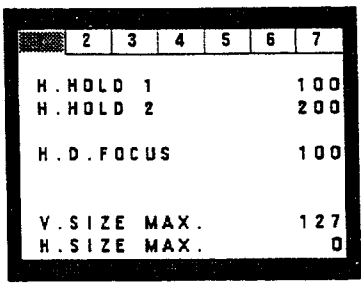


7-2) DISPLAY MODE

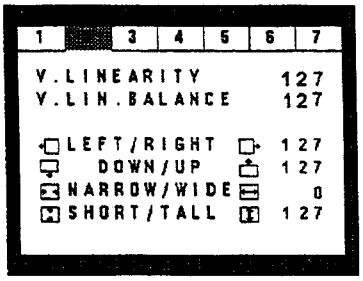


8.Structure of OSM Menu (serviceservice)

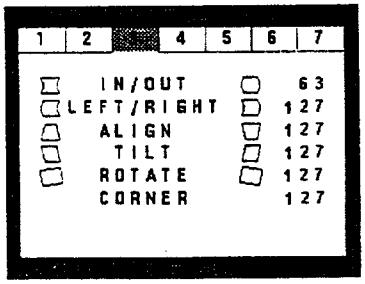
[TAB 1 (S)]



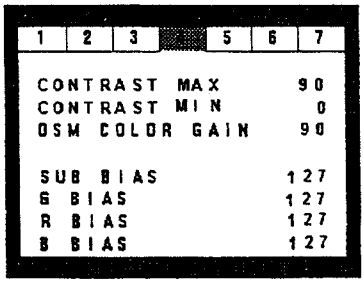
[TAB 2 (S)]



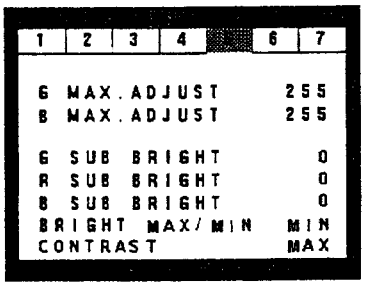
[TAB 3 (S)]



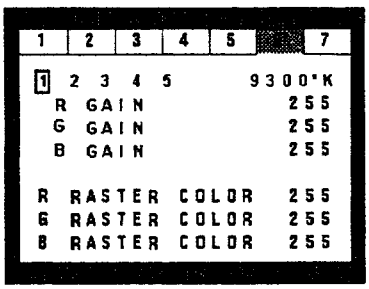
[TAB 4 (S)]



[TAB 5 (S)]

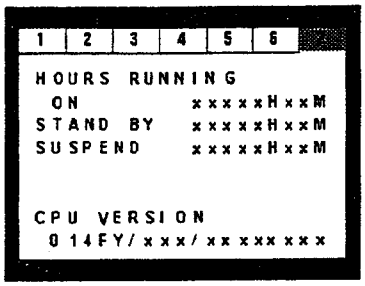


[TAB 6 (S)]



PRESET No.1 (9300° K)
PRESET No.2 (7500° K)
PRESET No.3 (6500° K)
PRESET No.4 (5000° K)
PRESET No.5 (4200° K)

[TAB 7 (S)]



ADJUSTMENT ITEM

[A] Initial Setting

[B] Main Adjustment

0. Previous Setting
1. Horizontal Hold Adjustment
2. High Voltage Adjustment
3. Horizontal Raster Position
*4. Horizontal Maximum Size Adjustment
5. Vertical Linearity Adjustment
6. Vertical Maximum Size Adjustment
*7. Deflection Distortion Adjustment
    - 7-0. Horizontal / Vertical Size Rough Adjustment
    - 7-1. Picture Tilt Adjustment
    - 7-2. Side Pincushion Balance Adjustment
    - 7-3. Side Pincushion Adjustment
    - 7-4. Trapezoid distortion Adjustment
    - 7-5. Corner Distortion Adjustment
    - 7-6. Parallelogram Distortion Adjustment
    - 7-7 Synthetic Distortion
*8. Preset Picture Size And Position Adjustment
9. Manual adjustment (use the alignment jig for good efficiency)

    *(As for step 4 , step 7 , step 8 , it can be substituted in step 9 .)
10. Video Amplitude Adjustment
    - 10-1. Color Standard Value / DAC Initial Value Setting Adjustment
    - 10-2. GAIN Adjustment
    - 10-3. Cut Off Adjustment
    - 10-4. Contrast Tracking Adjustment
    - 10-5. G.B Gain Adjustment
    - 10-6. Brightness Tracking Adjustment
11. Color Preset Adjustment
12. Focus Adjustment
13. CRT Purity Convergence
14. Write EDID Data

[C] Reference

1. Adjustment Signal
2. Timing of Adjustment Signal

[D] Inspection of PnP communication and Writing EDID to EEPROM and inspection of PnP communication

[A] Initial Setting

Before adjusting, set the position of control as follows.

(1) MAIN PWB

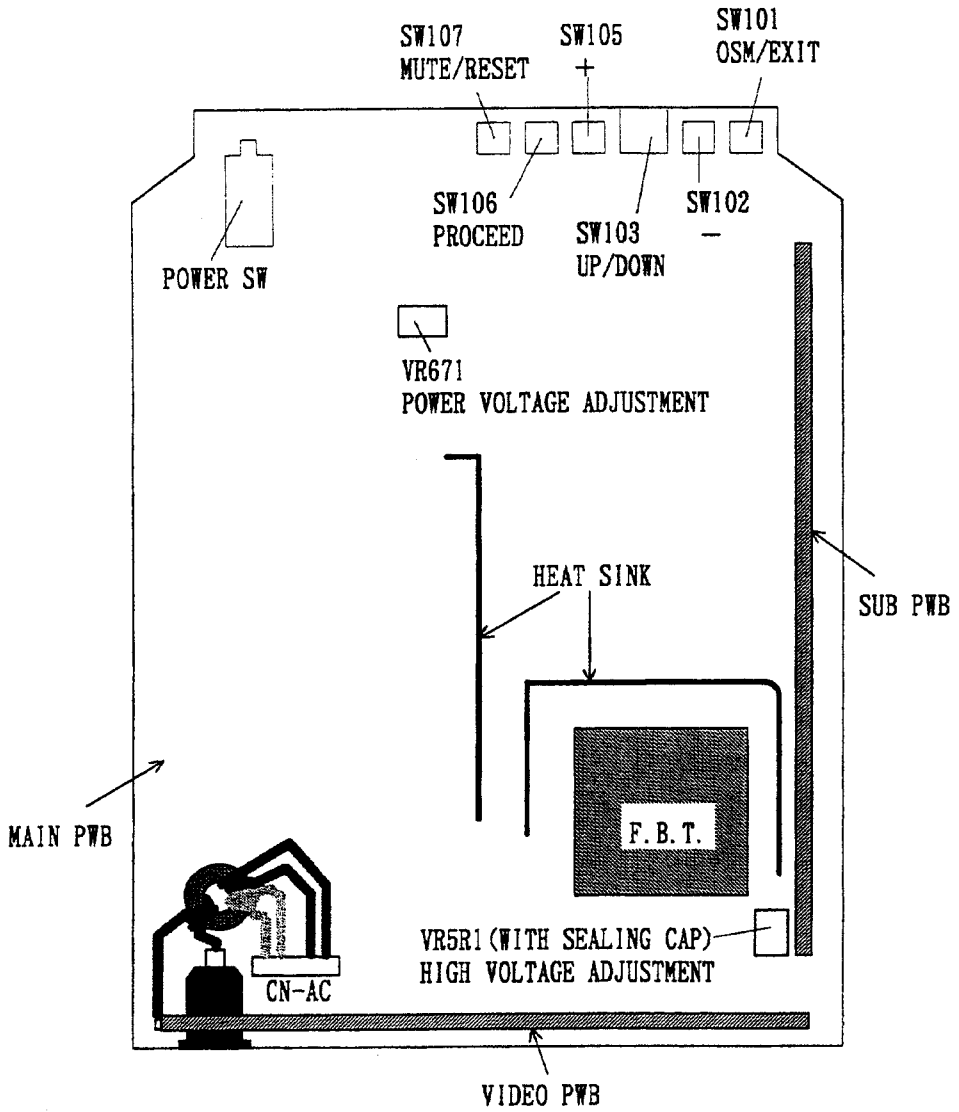
☆ SW601	:	Power switch	OFF
SCREEN VR	:		Fully counterclockwise
FOCUS VR	:		Fully counterclockwise
☆ VR5R1	:	High voltage adjustment	Fully counterclockwise

(2) SUB PWB

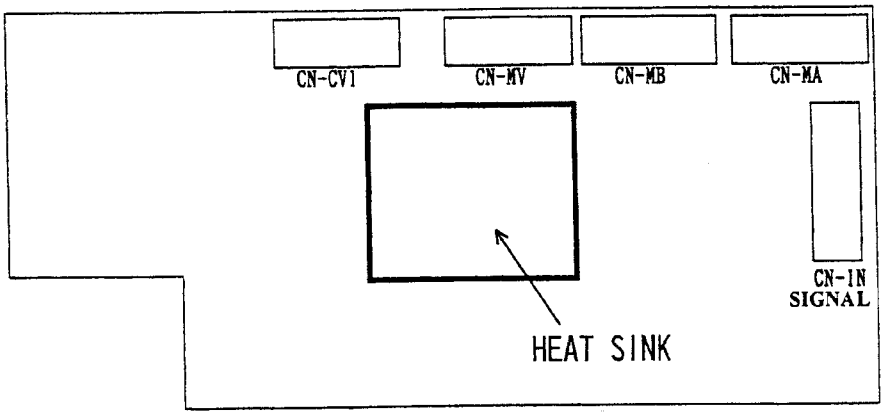
☆ VR581	:	Raster centering	Mechanical center
SW581	:	Raster centering	Set position to CRT side

Note: In particular, the controls with ☆ must have initial settings done before adjustments to prevent from damage by adjustment.

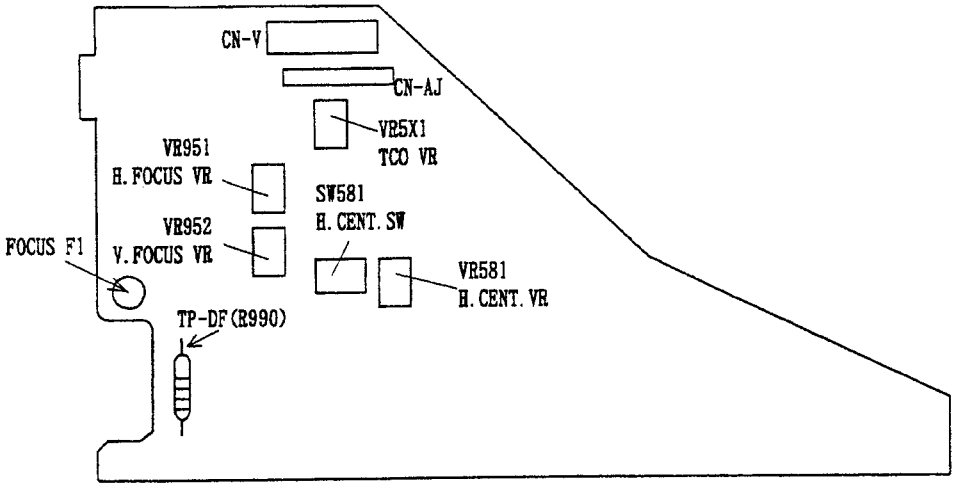
(3) Position of Connector / Test point of Adjustment



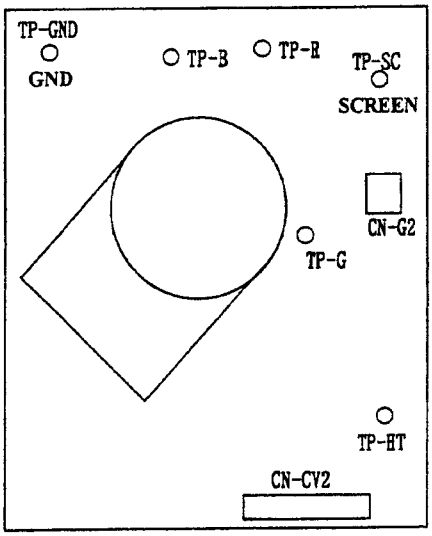
MAIN PWB



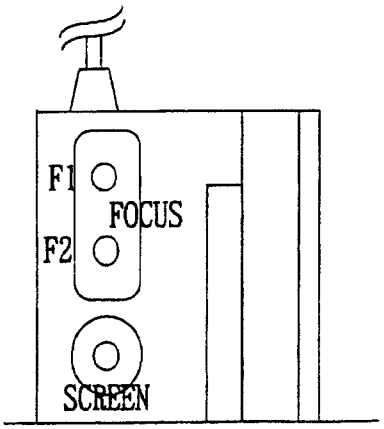
VIDEO PWB



SUB PWB



CRT PWB



F.B.T VR

[B] Main Adjustment

Warn to practice adjustment of CRT by this manual.

(1) Push "RESET" SW to reset a highlighted item.

(2) Close menu and turn the power off.

(3) Turn the monitor back on and confirm that the adjustment values / picture amplitude / color degree / distortion values are the same before the Menu was closed.
(When "PROCEED" SW is pushed by the condition which Menu (S) is displayed, OSM Menu will disappear. If "PROCEED" SW is pushed once more, OSM displays)

0. Previous Setting

Signal: No. 1 (VGA480) all white

(1) SCREEN VR Setting
CONTRAST : MAX
BRIGHTNESS : MIN
Open Menu(U), TAB2) "BRIGHTNESS & CONTRAST" and push "RESET" SW.
Adjust SCREEN VR so that the back-raster is just visible.

(2) FOCUS VR Setting
Open OSM Menu and adjust FOCUS VR for best OSM Menu readability.

1. Horizontal Hold Adjustment

Signal: No.11 HOLD-1(FH=24kHz) All White
No.12 HOLD-2(1024*768@85) All White

(1) Receive signal 11.

(2) Open Menu(S), TAB 1 "H.HOLD 1" and push "RESET" SW.(This is free run mode)

(3) Adjust SWs "+" and "-" so that there is one screen.

(4) Change Menu (S) "H.HOLD 1" to "H.HOLD 2" by "▼" SW.

(5) Receive signal 12.

(6) Open Menu(S), TAB 1 "H.HOLD 2" and push "RESET" SW.

(7) Adjust SWs "+" and "-" so that there is one screen.

(8) Push "▲" SW. (This is the normal screen)

(9) Receive signal 11.

(10) Check the screen that there is one image. If the screen is not stable, repeat steps (2) to (10).

2. High Voltage Adjustment

Signal: No.4 (800*60@72) All Black

(1) Adjust VR5R1 slowly so that high voltage is 25.0 ±0.2 kV.

(2) After adjusting, seal VR5R1 with a silicon adhesive and cap (VR5R1).

※ After high voltage adjustment, do not change combination of MAIN PWB and SUB PWB.

3. Horizontal Raster Position

Signal: No.12 (HOLD_2(1024*768@85) All Black

(1) Open Menu(S), TAB1 "H.SIZE MAX", Horizontal Size and adjust "+", "-" SW so that the horizontal size is 300±10 mm.

※ Note: Since the value of the amplitude changes very rapidly when "+" and "-" are pressed continuously, some care is needed not to increase it excessively.

(2) Push "EXIT" SW.

(3) Adjust VR581 so that the distance between the bezel and raster edge is as follows.

$$| X_{Left} - X_{Right} | \leqq 2.0 \text{ mm}$$

(4) If not, change SW581 to the FBT side and perporm step (3) once again.

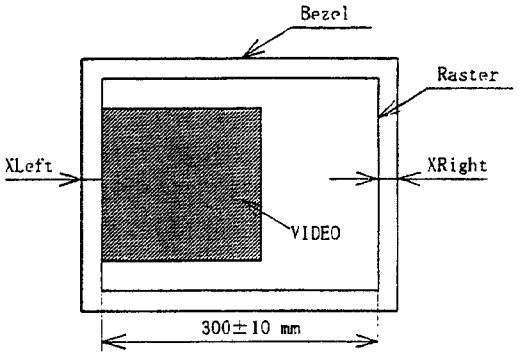


Fig 3-1 Horizontal Raster Centering

4. Horizontal Maximum Size Adjustment

4-1. Horizontal Maximum Size Adjustment (1)

Signal: No. 8 (SIZE-2) MAC Ⅱ 640*480
No. 9 (SIZE-3) MAC Ⅱ 832*624
No.10 (SIZE-4) 1024*768@85

※ Note: An active video signal is turned into 96.5% to a standard signal.

(1) Receive signal 9.
(2) Open Menu(S), TAB2 " NARROW / WIDE " and push "RESET" SW.
(This condition be able to H.Size Maximum adjustment. And the display on CRT Become 255 at "NARROW / WIDE".)
(3) If over scan the raster than the bezel, return to Menu (S), TAB1 "H.SIZE MAX" and adjust the raster into the bezel by "-" SW.
(4) Open Menu(S), TAB2 "LEFT / RIGHT" and adjust "+", "-" SW so that the picture is about center position.
(5) Open Menu(S), TAB3 "IN / OUT" and adjust "+", "-" SW so that the side pincushion distortion is straight.
(6) Open Menu(S), TAB1 "H.SIZE MAX" and adjust "+", "-" SW so that the horizontal size is 306 mm $^{+5}_{0}$ mm.
(7) Push "EXIT" SW.
(8) Repeat steps (2) to (7) for signals No.8 and 10.

4-2. Horizontal Maximum Size Adjustment(2)

Signal: No. 1 (VGA480)
No. 3 (VESA 640*480@75)
No. 4 (800*600@72)
No. 6 (1024*768@75)
No.14 (VGA350)
No.15 (VGA400)
No.16 (800*600@60)
No.17 (EVGA350@84)
No.18 (EVGA400@84)
No.20 (VESA 800*600@75)
No.21 (VESA 640*480@85)
No.22 (800*600@85)
No.23 (1280*1024@60)
No.24 (640*480@100)
No.25 (1024*768@70)
Video: All white

(1) Receive signal 1.
(2) Open Menu(S), TAB2 "NARROW / WIDE".
Make sure that "NARROW / WIDE" is set to 255.
When it has not set to 255, highlight "NARROW / WIDE" and push "RESET" SW.
(3) When the picture over scan, "-" SW is pushed and Menu(S), TAB1 "H.SIZE MAX" had indicated a highlight and picture size is reduced to inside the bezel.
(4) Open Menu(S), TAB2 "LEFT / RIGHT" and adjust "+", "-" SW so that the picture is about center position in the bezel.
(5) Open Menu(S), TAB3 "IN / OUT" and, if needed, adjust "+", "-" SW so that the side pincushion distortion is about straight.
(6) Open Menu(S), TAB1 "H.SIZE MAX" and adjust "+", "-" SW so that the horizontal size is 316 mm.
(7) Push "EXIT" SW.
(8) Repeat steps (2) ~ (7) for signals 2 ~ 23.

Note: Instead of above-mentioned signal, when the signal which turned horizontal active area into 96.5 % is used, item (6) is adjusted to 306 mm $^{+5}_{-0}$ mm

5. Vertical Linearity Adjustment

Signal: No. 6 (1024*768@75) Cross hatch pattern

(1) Receive signal 6.

(2) Open Menu(S), TAB2 "DOWN / UP" and adjust "+", "-" SW so that the picture is centered with in the raster.

(3) Open Menu(S), TAB2 "SHORT / TALL" and adjust "+", "-" SW so that the vertical size is 230 ±3mm. If not able to set vertical size, open Menu(S) TAB1 "V.SIZE MAX" and adjust "+" SW.

(4) Open Menu(S) TAB2 "VERTICAL LINEARITY" and adjust "+", "-" SW so that the vertical direction height of upper box and center box on the screen are equal.

Note: When a Menu is hidden temporarily for picture adjustment.
Push "PROCEED" SW once to display service Menu.
By pushing "PROCEED" SW once more, it returns to service Menu.

(5) Open Menu(S) TAB2 "V.LIN.BALANCE" and adjust "+", "-" SW so that vertical direction height of upper box and lower box on the screen are equal.

(6) Make sure that the linearity of upper, center, and lower on the screen are ±5% or less.

(7) Push "EXIT" SW.

6. Vertical Maximum Size Adjustment

Signal: No. 7 (SIZE-1 VGA400) All white

(1) Receive signal 7.

(2) Open Menu(S), TAB2 "DOWN / UP" and adjust "+", "-" SW so that the picture is centered with in the raster.

(3) Open Menu(S), TAB1 "V.SIZE MAX" and push "RESET" SW.

(4) Adjust "+", "-" SW so that the vertical size is 230mm±5mm.

(5) Push "EXIT" SW.

7. Deflection Distortion Adjustment

Signal: No. 4 (800*600@72) All white

Note: Turn the CRT face to east and degauss the monitor using an external degaussing coil.

7-0. Horizontal / Vertical Size Rough Adjustment

(1) Open Menu(S), TAB2 "LEFT / RIGHT", "DOWN / UP", "NARROW / WIDE", "SHORT / TALL" and adjust the screen size to the following values.

Horizontal Size: 306mm±5mm

Vertical Size: 230mm±5mm

Note: Hide the OSM Menu when confirming the adjustments.

7-1. Picture Tilt Adjustment

Signal: No. 4 (800*600@72) Cross Hatch Pattern

(1) Receive signal 4.

(2) Turn the CRT face to east and degauss the monitor using an external degaussing coil.

(3) Make sure that the picture tilt meets the following standards.

$X \leqq \pm 1.8$ mm

If out of specification, correct CRT assembly.

(4) Open Menu(S) TAB3 "ROTATE" and make sure that adjust "+", "-" SW so that the picture is tilted as follows.

"-" SW : counterclockwise

"+" SW : clockwise

(5) Open Menu(S) TAB3 "ROTATE" and adjust "+", "-" SW so that the picture tilt meets the following standards. The maximum correction is ±1.0mm.

$X \leqq \pm 1.8$ mm

(6) Push "EXIT" SW.

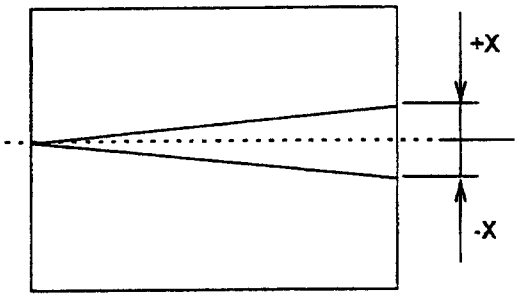


FIG 7-1 Picture Tilt

7-2. Side Pincushion Balance Adjustment

(1) Open Menu(S), TAB3 "LEFT / RIGHT".

Adjust "+", "-" SW so that the left and right side pincushion difference distortion is equal to X_{sl} and X_{sr}.

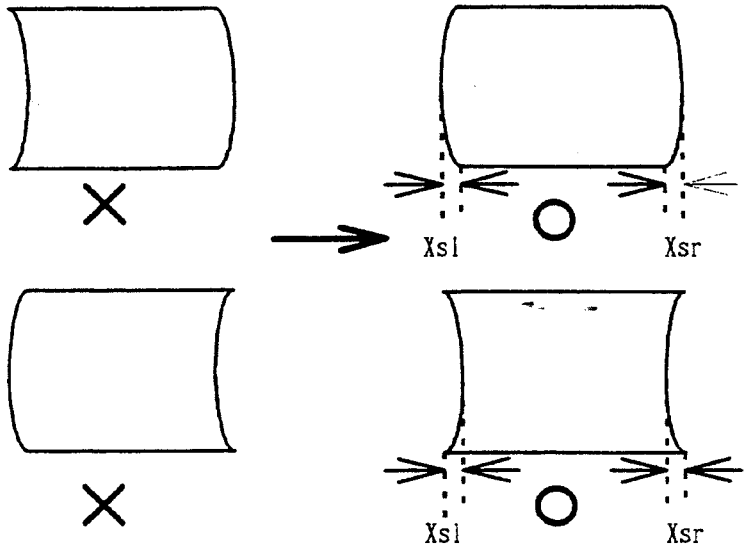


FIG 7-2 Side Pincushion Balance

7-3. Side Pincushion Adjustment

(1) Open Menu(S), TAB3 "IN / OUT".

Adjust "+", "-" SW so that the left and right side pincushion distortion is straight line.

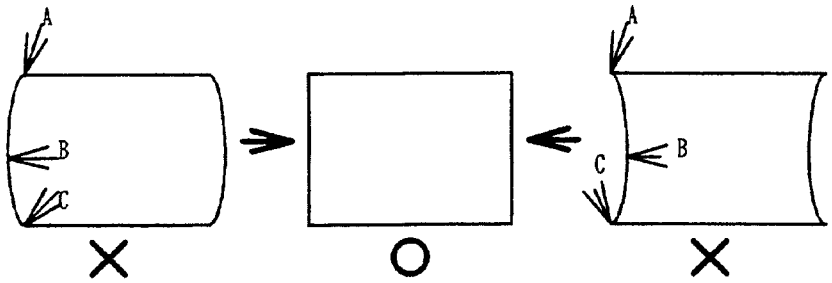


FIG 7-3 Side Pincushion

7-4. Trapezoid Distortion Adjustment

(1) Open Menu(S). TAB3 "ALIGN".

Adjust "+", "-" SW so that the Trapezoid Distortion is equal to X_{top} and X_{btm}.

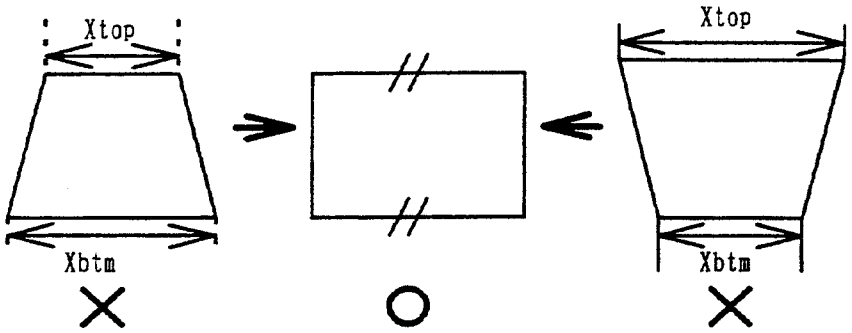


FIG 7-4 Trapezoid Distortion

7-5. Corner Distortion Adjustment

(1) Open Menu(S), TAB3 "CORNER".

Adjust "+", "-" SW so that the corner forms a right angle.

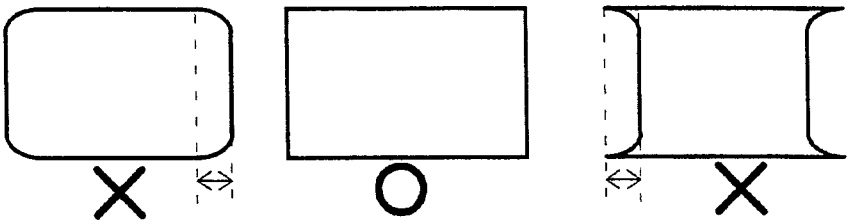


FIG 7-5 Corner Distortion

7-6. Parallelogram Distortion Adjustment

(1) Open Menu(S), TAB3 "TILT".

Adjust "+", "-" SW so that the vertical line and horizontal line at the screen's center fall at right angles.

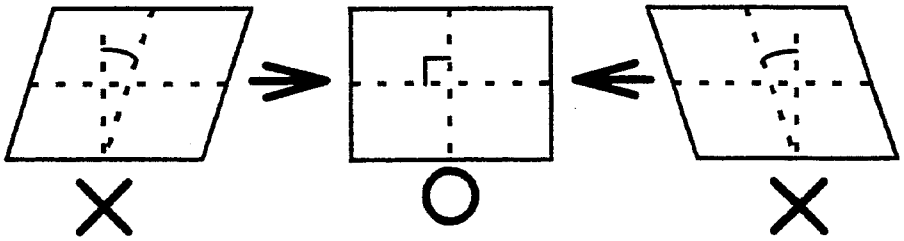


FIG 7-6 Parallelogram Distortion

7-7. Synthetic Distortion

(1) Synthesize steps 7-1 to 7-7 and make sure that each step's standard is met.

(2) When undulating, correct within each step standard.

Undulation is a directional difference of tilt at either AC and CE or both.

Following figures (I) and (II) are example. AB and BC, CD and DE are the direction of tilt.

Undulated correction is the same direction of tilt at AB and BC, CD and DE.

Following figures (III) and (IV) are example. In that state, each standard must be met.

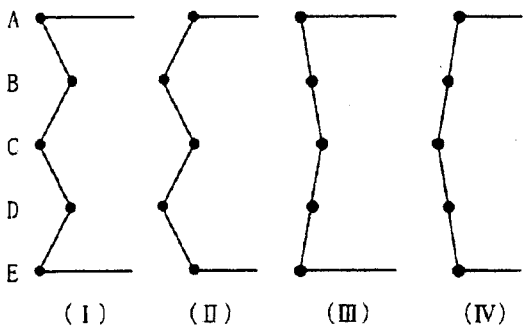


FIG 7-7 Undulated Definition

8. Preset Picture Size and Position Adjustment

Signal:	No. 1 (VGA480)	No. 4 (800*600@72)
	No. 2 (MAC Ⅱ 640*480)	No. 5 (MAC Ⅱ 832*624)
	No. 3 (640*480@75)	No. 6 (1024*768@75)
	No.12 (1024*768@85)	No.20 (VESA 800*600@75)
	No.14 (VGA350)	No.21 (VESA 640*480@85)
	No.15 (VGA400)	No.22 (800*600@85)
	No.16 (800*600@60)	No.23 (1280*1024@60)
	No.17 (EVGA350@84)	No.24 (640*480@100)
	No.18 (EVGA400@84)	No.25 (1024*768@70)
Video:	All White	

(1) Receive the all white pattern of signal 1.

(2) Open Menu(S), TAB2 "LEFT / RIGHT", "NARROW / WIDE", "DOWN / UP", "SHORT / TALL".

(3) Adjust the picture size and position as listed below by "+", "-" SW.

Picture size

H : 306±5 mm

V : 230±5 mm

Note: Vertical size of signals 14, 17 maximizes it.

Picture Position

H : $| X_{top} - X_{Bottom} | \leqq 2.5$ mm

V : $| X_{Left} - X_{Right} | \leqq 2.5$ mm

(4) Push "EXIT" SW.

(5) Receive the next signal and repeat steps (2) - (4).

Note: Before receiving the next signal, always push "EXIT" SW to store adjustments.

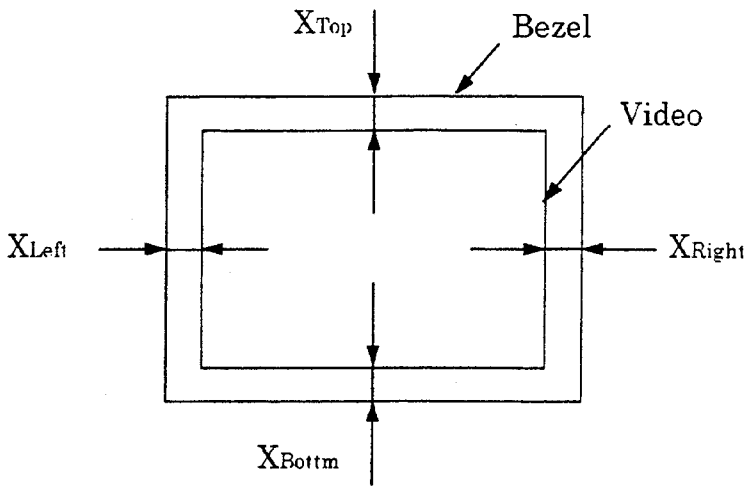


FIG 8-1 Picture Position

9. Manual adjustment (use the adjustment jig for good efficiency)

A. Purpose of the procedure

Advantage to use this jig is as follows

① Shorten Adjustment Time

Adjustment of Display Size , Positioning and Distortion can be done within 2 minutes by using this jig (Normally it takes around 15 minutes.)

② All adjustment for Size , Position and Distortion can be done from P.C. by using this jig. Adjustment for Size and Position for all preset signal can be done by selecting only one specified signal (MAC II 832*624).

③ Following Adjustment can be done automatically by using this jig.

(1) Horizontal Phase Adjustment
(2) Vertical position Adjustment
(3) Horizontal Size Adjustment
(4) Vertical Size Adjustment
(5) Trapezoid Distortion Adjustment

④ High level of skill for adjustment is not required.

B. Equipments for Adjustment

(1) AUTO ADJ I/F jig	1pc.
(2) ADJ Cable 15p-8p	1pc.
(3) ADJ Cable 8S-8S	1pc.
(4) The software for AUTO ADJ I/F jig	1pc.
(5) PC (IBM PC AT or Compatible)	1pc.
(6) Printer Cable	1pc.

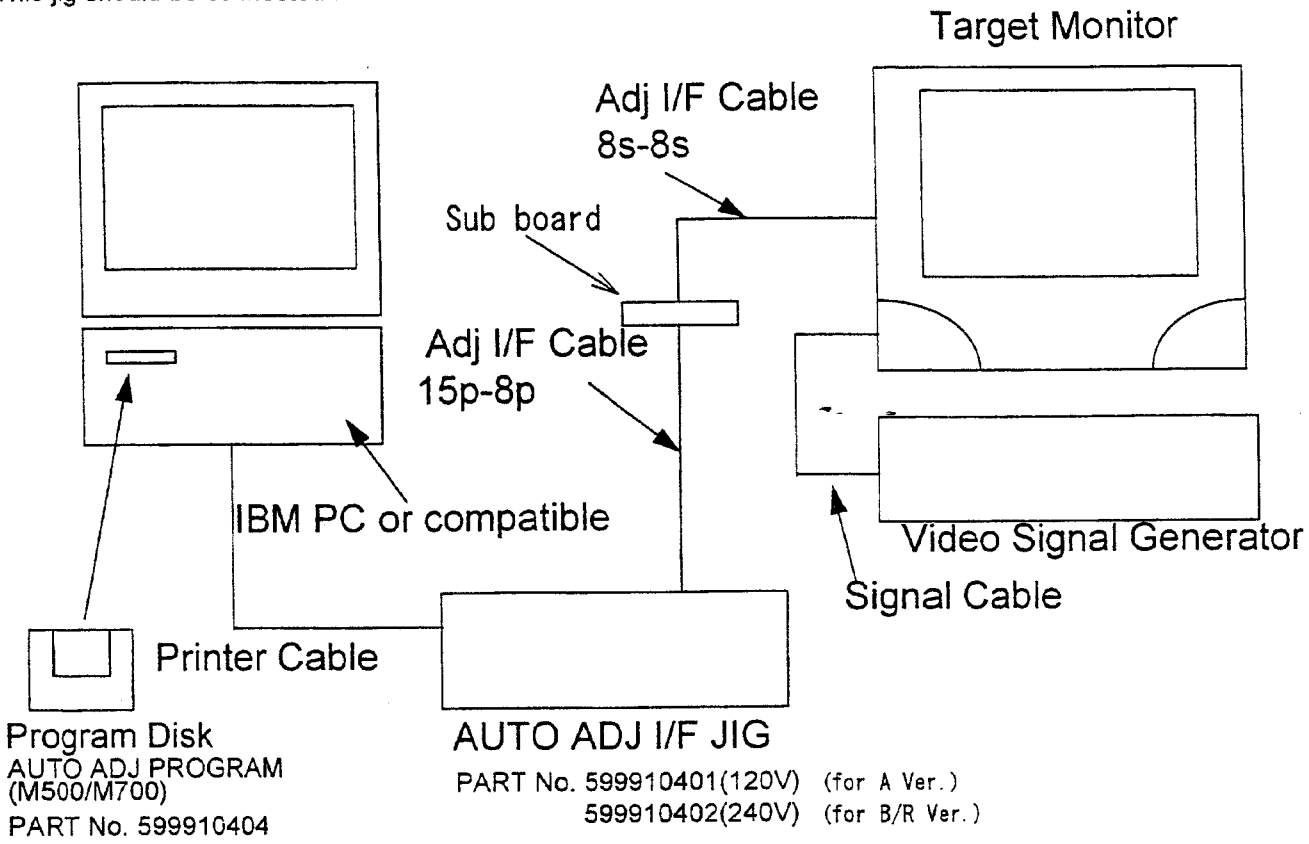
Note) items (5) and (6) should be prepaired at your side

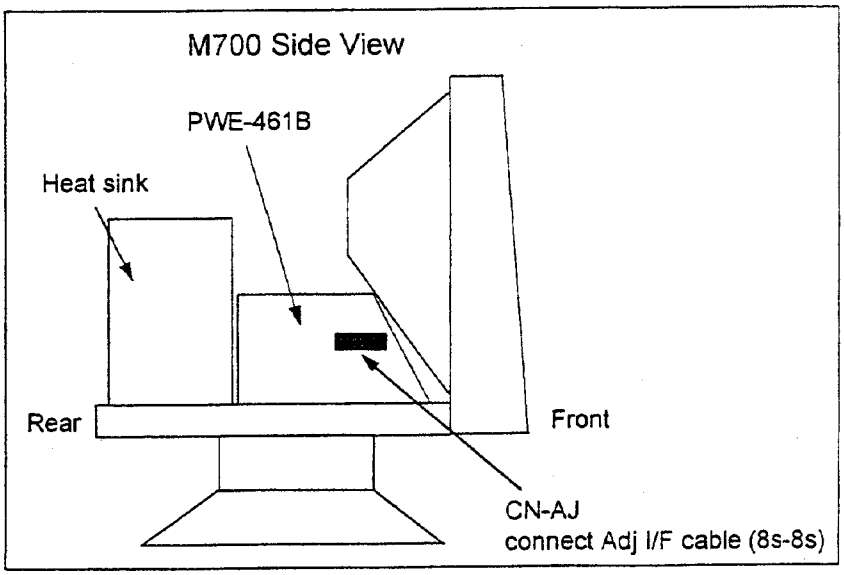
C. Operation

(1) Connection

1. Connect ADJ CABLE 15P-8P ("CN-ADJ") to AUTO ADJ I-F JIG.
2. Connect Printer Cable ("CN-PRN") to AUTO ADJ I/F JIG and PC.
3. Connect ADJ CABLE 8S-8S ("CN-AJ") to ADJ CABLE 15P-8P ("CN-ADJ") and CN-AJ of PWB of Monitor.

This jig should be connected as shown below





Jig Parts

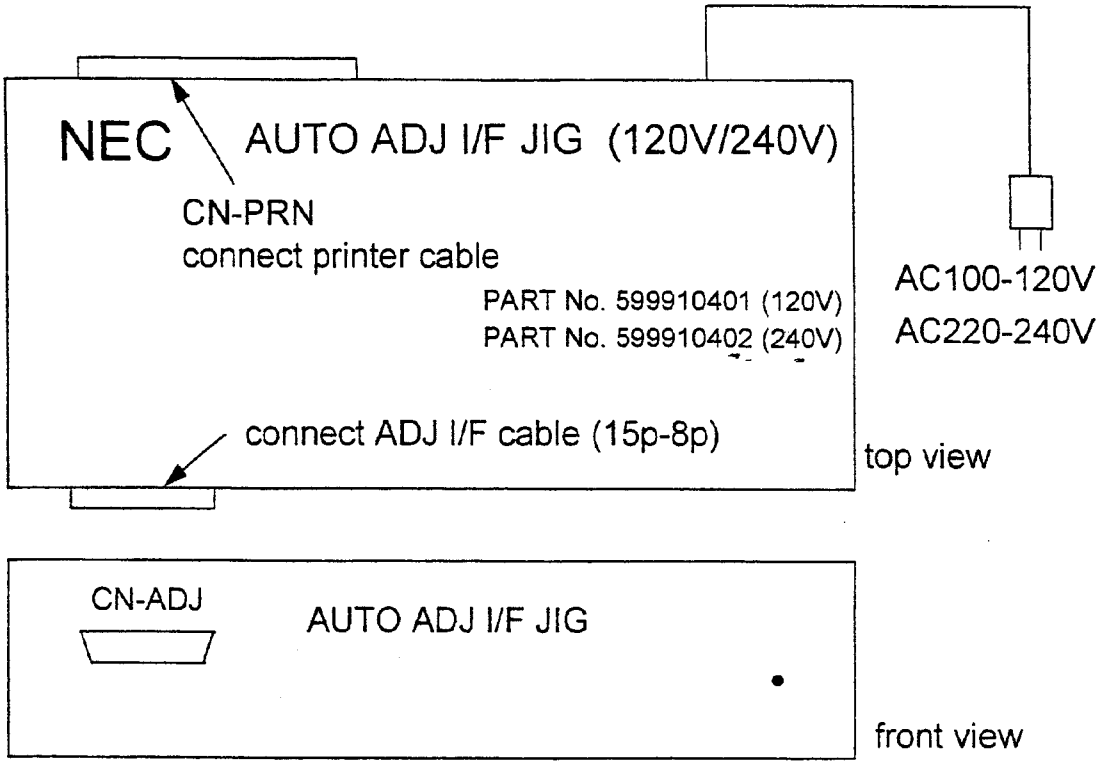


Fig 1 AUTO ADJ I/F JIG

Fig 2 ADJ CABLE 15P-15P

Fig 3 CN501 ADJ CABLE 8S-8S

(2) Operation

1. Insert FD of Software for AUTO ADJ I/F jig into PC.
2. Then Power on the PC , the AUTO ADJ I/F jig and Monitor.

(3) Adjustment Procedures

3-1. Following message will appear on Monitor Screen , when PC is turned on.

Size/Position Distortion Manual Adjust Program Version 1.01
ROM READ ? (Y/N) or END (E)

3-2-1. When a key "Y" is pushed

PC begins to read the Data which is saved in EEPROM of Monitor , and begins to adjust the monitor using the read Data as a reference.

3-2-2. When a key "N" is pushed

PC begins to adjust the monitor according to the Data saved in PROGRAM/DISK as reference Data

Note) Push a key "N", when it is concluded that the Screen size and Positioning do not work well and the data is destroyed. Also push a key "N" , when it is not concluded. (To be continue 3-3)

3-2-3. When a key "E" is pushed

PC ends adjustment procedure.

Adjustment procedure should be done based on Adjustment Procedure of Service Manual for each Model.

3-3. The following menu will appear on screen at the start menu , when a key "Y" or "N" is pushed.

1 : Size / Position
2 : Distortion
3 : USER INITIALIZE
4 : END

Meaning of the menu is as follows.

1 : Size / Position"	: Adjustment of Size and Position
2 : Distortion"	: Adjustment of Distortion
3 : USER INITIALIZE"	: Enter Data of Size and Position to USER signal.
4 : END"	: Return to start menu.

3-4. Sample Adjustment

Following is a sample of adjustment of "H.SIZE.MAX".

3-5. In "MENU" message

3-5-1) When "1 : Size / Position" is selected , following menu will be displayed on screen.

```
1:VGA350
2:VGA400
3:VGA480
4:800*600(60)
5:MAC2(640*480)
6:EVGA350
7:EVGA400
8:VESA640*480(75)
9:XGA
10:VESA800*600(75)
11:640*480(85)
12:800*600(72)
13:MAC2(832*624)
14:800*600(85)
15:640*480(100)
16:1024*768(70)
17:1024*768(75)
18:1280*1024(60)
19:1024*768(85)
20:TOTAL(MAC2(832*624))
21:V.SIZE(MAX)
22:END
                    No. ?
```

3-5-2) Then type "20" and push "ENTER" key to change signal of Signal Generator to MAC II 832*624.

When "20: TOTAL (MAC II (832*624)" is selected , Size and Position adjustment of other preset signal can be adjusted automatically , by only performing of Size and Position adjustment for one signal.

Other Items are as follows:

From No. "1" to "19" : Adjust Size and Position for each signal separately.
Other signal can not be adjusted at this mode.

No. "21" : Adjust V.SIZE(MAX)

No. "22" : End Size and Positioning adjustment.

3-5-3) When No. "20" is selected , following will be displayed. (Same as "1" to "19")

```
Size/Position Adjust

        SIGNAL :TOTAL(MAC2(832*624))
        1:H.POSI
        2:V.POSI
        3:H.SIZE
        4:V.SIZE
        5:H.SIZE(MAX)
        6:END
```

3-5-4) When No."3" (H.SIZE) is selected , following menu will be displayed.

```
Size/Position Adjust

        SIGNAL :TOTAL(MAC2(832*624))
        1:H.POSI
        2:V.POSI
        3:H.SIZE
        4:V.SIZE
        5:H.SIZE(MAX)
        6:END

        No. ?       3

Decrease :1,4,7    Increase :3,6,9   Original values:5
END(NO WRITE) : e E       END(WRITE) :ENTER
```

Function of Each key is as follows.

"1" : Data value decreases by 1 (H. SIZE becomes smaller)
"4" : Data value decreases by 5
"7" : Data value decreases by 10

"3" : Data value increases by 1 (H. SIZE expands)
"6" : Data value increases by 5
"9" : Data value increases by 10

"5" : Set up data value to reference value.

"e" or "E" : Ends without saving data.

"ENTER" : Ends after saved data.

3-5-5) Push key "5" to set up reference value. And then push one of key "3" or "6" or "9" to set up data to 255.

Note) If screen is over scaned by smaller value than 255 , push "ENTER" key to end "H.SIZE" adjustment. Then select "5 : H.SIZE (MAX)" , decrease the Horizontal Size , and again set up data value to 255 at "H.SIZE" adjustment procedure.

In this case , be careful not to shrink horizontal size too small by "5 : H.SIZE (MAX)"

3-5-6) Push key "e" and return to menu of Size / Position , and select "5 : H.SIZE (MAX)". And adjust horizontal size to 280mm so that it becomes full-scan.

3-5-7) Push key "ENTER" to ends the adjustment.

(Value of "5 : H.SIZE (MAX)" for all preset signal is writen by this operation.)

3-5-8) Supply signal from 1 to 19 and confirm that H.Size is 260mm ±2mm for each signal.

3-6. Adjust Size , Position and Distortion by same method as above.

D. Programming flow chart

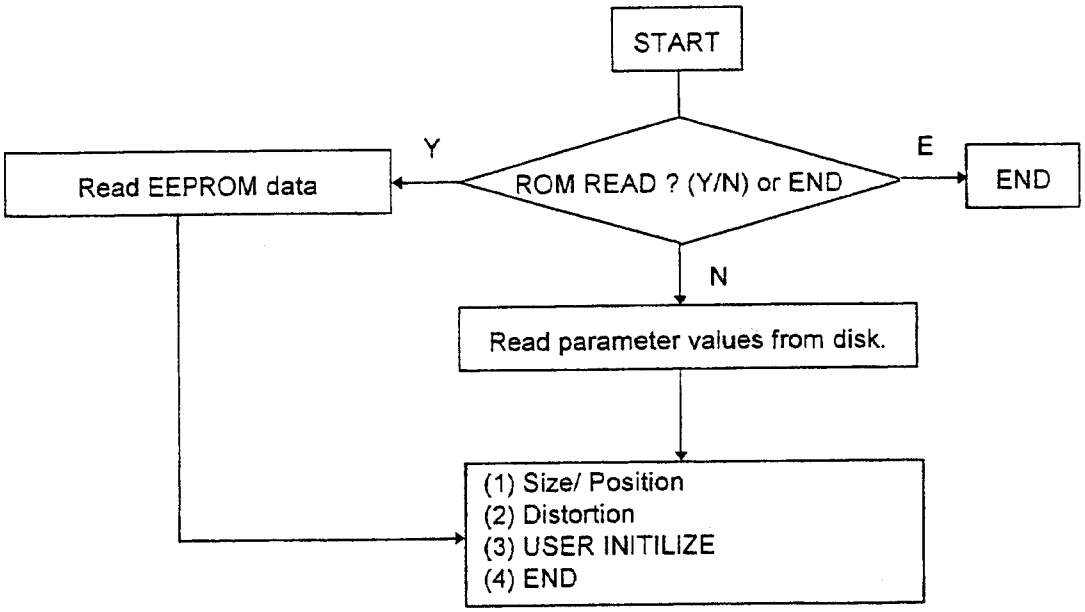


Fig 4 A start of service adjustment program

10. Video Amplitude Adjustment

Note:Confirm that the video signal of generator is as follows.

Video: Analog 0.7 Vp-p ± 0.01V p-p (terminated 75 ohms ±1%)

10-1. Color Standard Value / DAC Initial Value Setting Adjustment

Signal: No.13 (1/9 WINDOW MAC Ⅱ 832*624)

(1) Push "EXIT" SW, and turn SCREEN VR clockwise, and so that OSM can be seen.

(2) In Menu(S), TAB4 , TAB5 , TAB6 find that each item is set with the following values. Set the following values by "+", "-" SW if value differs.

Menu(S), TAB4	
"CONTRAST MAX"	90
"CONTRAST MIN"	0
"OSM COLOR GAIN"	90
"SUB BIAS"	220
"R BIAS", "G BIAS", "B BIAS"	0
Menu(S), TAB5	
"G MAX.ADJUST"	200
"B MAX ADJUST"	175
"R SUB BRIGHT", "G SUB BRIGHT", "B SUB BRIGHT"	0
Menu(S), TAB6	
"R / G / B GAIN"	255
"R / G / B RASTER COLOR"	255

10-2. Gain Adjustment

Signal: No.13 (1/9 WINDOW MAC Ⅱ 832*624) Window Pattern
All Black

(1) Receive the 1/9 window pattern of signal 13.

(2) Open Menu(S), TAB4 "CONTRAST MAX" and push "RESET" SW. (CONTRAST : MAX.)

(3) Adjust "+", "-" SW so that TP-R on the CRT PWB is set to 48Vp-p.(+1V/ -0V)
Note: Press the "PROCEED" SW to hide OSM, while performing this adjustment.

(4) Open Menu(S), TAB4 "CONTRAST MIN" and push "RESET" SW. (CONTRAST : MIN.)

(5) Adjust "+", "-" SW so that TP-R on the CRT PWB is set to 10 Vp-p.(±1 V)
Note: Press the "PROCEED" SW to hide OSM, while performing this adjustment.

(6) Receive the all black pattern of signal 13.

(7) Open Menu(S), TAB4 "OSM COLOR GAIN".

(8) Adjust "+", "-" SW so that TP-R on the CRT PWB is set to 40 Vp-p.(+0V / -1V)

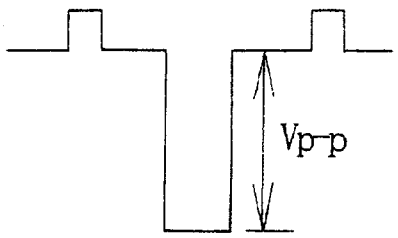


FIG 9-1 Wave form of TP-R

(9) Push "EXIT" SW.

10-3. Cut off Adjustment

Signal: No.13 (1/9 WINDOW MAC Ⅱ 832*624) all black

(1) Open Menu(S), TAB4 and verify that the value of "R BIAS", "G BIAS", "B BIAS" is 0.
Push "RESET" SW, if needed, to set value to 0.

(2) Open Menu(S), TAB4 " SUB BIAS " and push "RESET" SW.
(USER BRIGHTNESS is center, and "SUB BIAS" is 0.)
Note: Do not touch a front panel key and do not come out from "SUB BIAS" since a picture can not be seen.

(3) Connect the DMM with a high voltage probe at TP-SC on the CRT PWB and adjust SCREEN VR to obtain 650 V DC ± 5 V DC. (Use a high voltmeter whose maximum voltage is more than 1.5kV and input resistance is more than 1000 M Ω.)

(4) Set 00 channel x,y,Y modes of color analyzer CA-100 and make sure that the following values are preset.

x = 0.300
y = 0.315
Y = 0.2cd/m²

(5) Set analyzer mode at color analyzer.

(6) Open Menu(S), TAB4 " SUB BIAS " and increase Sub Bias data. The first signal color that appears is the reference color and adjust "+", "-" SW so that its color analyzer indicated value is 100±10.
Note: When the indicated value of the reference color is not 100 in maximum of Sub Bias date(255), increase the reference color Bias and adjust the indicated values to obtain 100±10.

(7) Increase the two color Biases data except the reference color and adjust each one to obtain 100±10.
Note: Close OSM Menu at the time of indicative value confirmation at once in order that the color analyzer takes influence of a picture of OSM.

(8) Push "EXIT" SW.

(9) Setting modes x, y, Y at the color analyzer, measure the window color temperature.
This measurement determines x=x1, y=y1.

10-4. Contrast Tracking Adjustment

Signal: No.13 (1/9 WINDOW MAC Ⅱ 832*624) Window Pattern
CONTRAST :MAX
BRIGHTNESS :CENTER

(1) Receive Signal 13.
(2) Open Menu(S), TAB5 "CONTRAST" and push "RESET" SW.
And Push "+" SW to maximize contrast.
(3) Setting modes x, y, Y at the color analyzer, measure the window color temperature.
This measurement determines x=x2, y=y2.
(4) In Menu(S), TAB5, highlight "CONTRAST" and push "-" SW to minimize contrast by toggling to"MIN".
(5) Measure the window color temperature.
This measurement determines x=x3, y=y3.
(6) Make sure that the window color temperature is following value.
If not , adjust data value of "R BIAS" , "B BIAS" to the following value.
$x3 = x2 \pm 0.005$ $y3 = y2 \pm 0.005$
(7) Open Menu(S), TAB5, highlight "CONTRAST" , and push "+" SW to maximize contrast by toggling to"MAX".
(8) Measure the window color and confirm that the reading is following value.
$x2 = x3 \pm 0.005$ $y2 = y3 \pm 0.005$.
If not, repeat items (2) to (8).
(9) Push "EXIT" SW.

10-5. G, B Gain Adjustment

Signal: No.13 (1/9 WINDOW MAC Ⅱ 832*624) Window Pattern

(1) Receive Signal 13(window pattern).
(2) Open Menu(S), TAB5 "B MAX ADJUST" and push "RESET" SW.
(CONTRAST : MIN BRIGHTNESS : CENTER)
(3) Open Menu(S), TAB5 "B MAX ADJUST" and adjust "+", "-" SW so that the color temperature is the following value.
$x = x1 \pm 0.005$
(4) Open Menu(S), TAB5 "G MAX ADJUST" and push "RESET" SW.
(5) Open Menu TAB5 (S) "G MAX ADJUST" and adjust "+", "-" SW so that the color temperature is the following value.
$y = y1 \pm 0.005$
(6) Push "EXIT" SW.

10-6. Brightness Tracking Adjustment

Signal: No.13 (1/9 WINDOW MAC Ⅱ 832*624) all black
CONTRAST : Not specified
BRIGHTNESS : MAX

(1) Receive Signal 13.
(2) Open Menu(S), TAB5 "BRIGHT MAX/MIN" and push "+" SW. (BRIGHTNESS : MAX)
(3) Open Menu(S) ,TAB5 "G SUB BRIGHT" and push "RESET" SW.
(4) Set modes x, y, Y at color analyzer.
Adjust "+", "-" SW so that the brightness on the screen center is 4.0 ± 0.5 cd/㎡.
(5) Open Menu(S), TAB5 "R SUB BRIGHT", "B SUB BRIGHT" and adjust "+", "-" SW so that the each color temperature measured in step 10-3.
Note:Before the color temperature measurement, "PROCEED" SW is pushed and OSM is hidden.

B SUB BRIGHT: $y = y1 \pm 0.005$
R SUB BRIGHT: $x = x1 \pm 0.005$

(6) Push "EXIT" SW.

11. Color Preset Adjustment

Signal: No.13 (1/9 WINDOW MAC Ⅱ 832*624) Window Pattern
All Black

(1) Receive Signal 13(window pattern).
(2) Open Menu(S), TAB6 "1" and push "RESET" SW.
(CONTRAST : MIN, BRIGHTNESS : center)
Adjust "R GAIN", "G GAIN", "B GAIN" so that the color temperature is the following value.

PRESET No.	x	y
1	0.281 ± 0.003	0.311 ± 0.003

The color temperature measurement changes as follows.
When "R GAIN" is decreased, x value decreases.
When "G GAIN" is decreased, y value decreases.
When "B GAIN" is decreased, x and y value increase.

(3) Open Menu(S), TAB6 ,and adjust Color Presets No.2 to 5 the following values.

PRESET No.	x	y
2	0.300 ± 0.003	0.315 ± 0.003
3	0.315 ± 0.003	0.325 ± 0.003
4	0.345 ± 0.003	0.350 ± 0.003
5	0.375 ± 0.003	0.370 ± 0.003

(4) Receive signal 13. (all black)
(5) Open Menu(S), TAB6 "R RASTER COLOR" and push "RESET" SW. (BRIGHTNESS : MAX)
(6) Set "COLOR PRESET" to item No.2.
(7) Open Menu(S), TAB6 "R RASTER COLOR", "G RASTER COLOR", "B RASTER COLOR" and adjust "+", "-" SW so that the color temperature is the following values.
$x = 0.300 \pm 0.003$ $y = 0.315 \pm 0.003$
(8) Push "EXIT" SW.

12. Focus Adjustment

Signal:	No. 1 (VGA480)	Cross Hatch Pattern
	No. 6 (1024*768@75)	White "$" character Pattern
		Cross Hatch Pattern

(1) Receive Signal 1 (Cross Hatch Pattern).

(2) Make sure that the screen size is as follows.

H : 306±5.0mm

V : 230±5.0mm

(3) Open Menu(s), TAB1 "H.D.FOCUS" ,and make sure that "H.D.FOCUS" is set to 127.
If it is not set to 127, highlight "H.D.FOCUS" and push "RESET" SW.

(4) Adjust the voltage at TP-D.F.(R990) on the SUB PWB to obtain the following values.
For the horizontal cycle voltage adjustment, use H.FOCUS VR on the SUB PWB.
If further adjustment is needed, open Menu(s), TAB1 "H.D.FOCUS" and adjust "+", "-" SW.
For the vertical cycle voltage adjustment, use V.FOCUS VR on the SUB PWB.

Horizontal cycle : 360V±10Vp-p

Vertical cycle : 110V±5Vp-p

(See figure 12-1)

Note: When measuring Vp-p, use a 100:1 probe with capacitance of approx 2pF.

(5) Push "EXIT" SW.

(6) Set CONTRAST is MAX, BRIGHTNESS is center

(7) Adjust FOCUS VR F1 on the FBT to the thinnest horizontal lines.

(8) Adjust FOCUS VR F2 on the FBT to the thinnest vertical lines.
At both the screen center and corner , adjust focus so the horizontal lines do not form halos.

(9) Repeat steps (7) and (8) and adjust for uniform focus on the whole screen.

(10) Receive Signal 6 (White "$" character Pattern).

(11) Make sure that the white "$" characters are crisp as possible.

(12) When the focus is not obtained in step (11) , fine adjust FOCUS VR F1 and F2 so that the whole screen is uniform.

(13) In above adjustment , when the focus is not uniform through out the screen , each parabolic wave should be corrected with in ±50V at the horizontal cycle and to ±20V at the vertical cycle.
For horizontal cycle, make corrections to H.D.FOCUS, if necessary.
After corrections , perform steps (6) to (12) again.

(14) Receive Signal 6 (Cross Hatch Pattern) and make sure that R,G,B lines do not form halos.

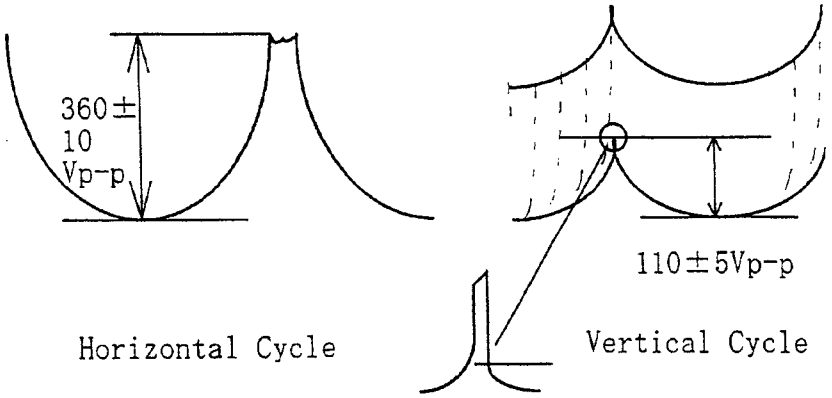


Fig 12-1 Dynamic Focus Wave Form

13. CRT Purity Convergence

Signal: No. 6 (1024*768@75) Cross Hatch Pattern

(1) The CRT face should be facing east and degauss the entire unit with an external degaussing coil.

(2) Receive the cross hatch pattern of signal 6 and make sure that the screen size is as shown.

H : 306±5.0mm

V : 230±5.0mm

(3) Measuring the misconvergence , if not the following standards, adjust the static convergence by using the 4-pole/6-pole magnets on the CPM assembly.

x = 0.35 mm

y = 0.35 mm

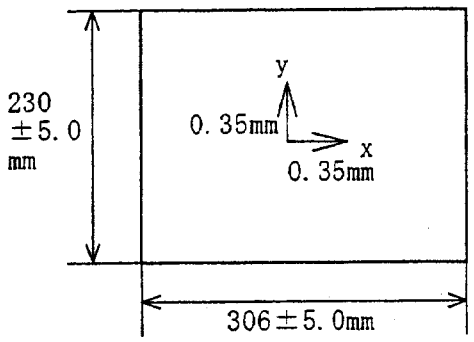


FIG 13-1 Convergence

14. Write EDID Data

Signal: No. 26 (EDID)

(1) Receive Signal 26

(2) Input Table 14-1's data in order at signal cable pin 12 (DATA) in its sequence.
Input clock at pin 15 of signal cable (SCLK). Communication protocol should be based on I^2C BUS protocol. (Fig 14-1 is writing sequence for 1 byte, therefore repeat the writing sequence for 128 byte.)

Table 14-1 Data List(Management number : EDID-037)

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
00	00	FF	FF	FF	FF	FF	FF	00	38	A3	05	43	01	01	01	01
10	*1	*2	01	01	0C	20	18	78	EB	A0	B2	A2	54	4C	9B	26
20	10	48	4F	FF	FE	80	01	01	01	01	01	01	01	01	01	01
30	01	01	01	01	01	01	62	2A	00	A0	51	00	2A	40	40	80
40	13	00	32	B6	10	00	00	1E	00	00	00	FD	00	37	78	1F
50	45	0C	00	0A	20	20	20	20	20	20	00	00	00	FC	00	4E
60	45	43	20	40	37	30	30	0A	20	20	20	20	00	00	00	FF
70	00	*3													00	*4

*1 : adress 10h — Manufactured month × 4

*2 : adress 11h — Manufactured year − 1990

*3 : adress 71h~7Dh — Serial No. (ASCI CODE)
Remainder adds 0Ah following Serial No. and puts 20h.

*4 : adress 7Fh — 1byte check Sam
A complement of harmony of address 00h~7Eh

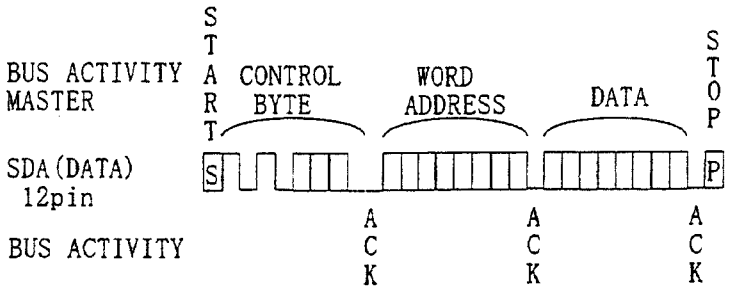


FIG 14-1 EDID Data Wiiting Method

[C] Reference

1. Adjustment Signal

NO.	Signal Name	SYNC Form	SYNC Polarity(H/V)	
1	VGA480	SEPARATE	NEG/NEG	
2	MAC II 640*480	SYNC ON GREEN		※1
3	VESA 640*480@75	SEPARATE	NEG/NEG	
4	800*600@72	SEPARATE	POS/POS	
5	MAC II 832*624	SYNC ON GREEN		※1
6	1024*768@75	SEPARATE	POS/POS	
7	SIZE-1(VGA400)	SEPARATE	NEG/POS	※6
8	SIZE-2(MAC II 640*480)	SYNC ON GREEN		※2
9	SIZE-3(MAC II 832*624)	SYNC ON GREEN		※2
10	SIZE-4(1024*768@85)	SEPARATE	POS/POS	※2
11	HOLD-1(FH=24KHz/FV=50Hz)	SEPARATE	POS/POS	※3
12	HOLD-2(1024*768@85 FH=69KHz)	SEPARATE	POS/POS	※3
13	1/9WINDOW(MAC II 832*624)	SYNC ON GREEN		※1
14	VGA350	SEPARATE	POS/NEG	
15	VGA400	SEPARATE	NEG/POS	
16	800*600@60	SEPARATE	POS/POS	
17	EVGA350@84	SEPARATE	POS/NEG	
18	EVGA400@84	SEPARATE	NEG/POS	
19	XGA(8514/A)	SEPARATE	POS/POS	
20	VESA 800*600@75	SEPARATE	POS/POS	
21	VESA 640*480@85	SEPARATE	NEG/NEG	
22	800*600@85	SEPARATE	POS/POS	
23	1280*1024@60	SEPARATE	POS/POS	
24	640*480@100	SEPARATE	NEG/NEG	
25	1024*768@70	SEPARATE	NEG/NEG	
26	EDID	SEPARATE	NEG/NEG	

※1 On SYNC ON GREEN, SYNC is output at the same time in composite on a line of H.SYNC.

※2 Video active signal is 96.5% of the regular timing in the horizontal signal.

※3 Please use as following when FH can not be produced in the signal generator and near value is used.
As for 24kHz,use a signal of the highest cycle by FH ≦ 24.0 kHz.
As for 69kHz,use a signal of the lowest cycle by FH ≧ 69 kHz. (An error is 50Hz or less)

※4 Please supply the sync signal which is output from the signal generator to the following.
H/V COMPOSITE SIGNAL : To the non-adjusted set.
V.SYNC SIGNAL ONLY : To the color analyzer CA-100.

※5 Cross hatch pattern consist of the 17 vertical line and the 13 horizontal line.

※6 Video active signal is 95% of the regular timing in the vertical signal.

2. Timing of Adjustment Signal

Adjustment / Inspection Signal (1)

	PROGRAM NO.		1	2	3	4	5	6
	SIGNAL NAME		VGA480	MAC II 640*480	640*480 @75(VESA)	800*600 @72	MAC II 832*624	1024*768 @75
	RESOLUTION		640*480	640*480	640*480	800*600	832*624	1024*768
	DOT CLOCK	(MHz)	25.175	30.24	31.5	50	57.283	78.75
	fh	(kHz)	31.47	35.00	37.50	48.08	49.72	60.02
	fv	(Hz)	59.94	66.67	75.00	72.19	74.55	75.03
H	CELL SIZE	(DOT)	8	8	8	8	8	8
	TOTAL	(DOT)	800	864	840	1040	1152	1312
		(CHR)	100	108	105	130	144	164
		(uS)	31.78	28.57	26.67	20.80	20.11	16.66
	DISP	(DOT)	640	640	640	800	832	1024
		(CHR)	80	80	80	100	104	128
		(uS)	25.42	21.16	20.32	16.00	14.52	13.00
	FRONT	(DOT)	16	64	16	56	32	16
		(uS)	0.64	2.12	0.51	1.12	0.56	0.20
	SYNC PULSE	(DOT)	96	64	64	120	64	96
		(uS)	3.81	2.12	2.03	2.40	1.12	1.22
	BACK	(DOT)	48	96	120	64	224	176
		(uS)	1.91	3.17	3.81	1.28	3.91	2.23
V	CELL SIZE	(H)	16	16	16	16	16	16
	TOTAL	(H)	525	525	500	666	667	800
		(mS)	16.683	15.000	13.333	13.853	13.414	13.328
	DISP	(H)	480	480	480	600	624	768
		(CHR)	30	30	30	37.5	39	48
		(mS)	15.253	13.714	12.800	12.480	12.549	12.795
	FRONT	(H)	10	3	1	37	1	1
		(mS)	0.318	0.086	0.027	0.770	0.020	0.017
	SYNC PULSE	(H)	2	3	3	6	3	3
		(mS)	0.064	0.086	0.080	0.125	0.060	0.050
	BACK	(H)	33	39	16	23	39	28
		(mS)	1.049	1.114	0.427	0.478	0.784	0.466
	INTERLACE		NON	NON	NON	NON	NON	NON
	POLARITY	(H/V)	NEG/NEG	NEG/NEG	NEG/NEG	POS/POS	NEG/NEG	POS/POS
	COMPOSITE SYNC			NEG			NEG	
	COMPOSITE VIDEO			GREEN			GREEN	
	CHARACTER FONT		7x9	7x9	7x9	7x9	7x9	7x9
	SERRATION		OFF	ON	OFF	OFF	ON	OFF
	EQP		OFF	OFF	OFF	OFF	OFF	OFF

Adjustment / Inspection Signal (2)

	PROGRAM NO.		7	8	9	10	11	12
	SIGNAL NAME		SIZE-1 VGA400	SIZE-2 MAC II 640*480	SIZE-3 MAC II 832*624	SIZE-4 1024*768 @85	HOLD-1 24kHz @50Hz	HOLD-2 1024*768 @85
	RESOLUTION		640*400	640*480	832*624	1024*768	638*400	1024*768
	DOT CLOCK	(MHz)	25.175	30.240	57.283	94.5	20.544	94.5
	fh	(kHz)	31.47	35.00	49.72	68.68	24.00	68.68
	fv	(Hz)	70.09	66.667	74.55	85.00	50.00	85.00
H	CELL SIZE	(DOT)	8	8	8	8	8	8
	TOTAL	(DOT)	800	864	1152	1376	856	1376
		(CHR)	100	108	144	172	107	172
		(uS)	31.78	28.57	20.11	14.56	41.667	14.56
	DISP	(DOT)	640	618	802	988	638	1024
		(CHR)	80					128
		(uS)	25.42	20.43	14.00	10.45	31.055	10.84
	FRONT	(DOT)	16	75	47	66	69	48
		(uS)	0.64	2.48	0.82	0.698	1.117	0.51
	SYNC PULSE	(DOT)	96	64	64	96	64	96
		(uS)	3.81	2.116	1.12	1.02	3.115	1.02
	BACK	(DOT)	48	107	239	226	85	208
		(uS)	1.91	3.54	4.472	2.392	4.137	2.20
V	CELL SIZE	(H)	16	16	16	16	16	16
	TOTAL	(H)	449	525	667	808	480	808
		(mS)	14.268	15.00	13.414	11.765	20.00	11.765
	DISP	(H)	380	480	624	768	400	768
		(CHR)		30	39	48	25	48
		(mS)	12.075	13.714	12.549	11.183	16.667	11.183
	FRONT	(H)	22	3	1	1	47	1
		(mS)	0.699	0.086	0.020	0.015	1.958	0.015
	SYNC PULSE	(H)	2	3	3	3	8	3
		(mS)	0.064	0.086	0.060	0.044	0.333	0.044
	BACK	(H)	45	39	39	36	25	36
		(mS)	1.43	1.114	0.784	0.524	1.042	0.524
	INTERLACE		NON	NON	NON	NON	NON	NON
	POLARITY	(H/V)	NEG/POS	NEG/NEG	NEG/NEG	POS/POS	NEG/NEG	POS/POS
	COMPOSITE SYNC			NEG	NEG			
	COMPOSITE VIDEO			GREEN	GREEN			
	CHARACTER FONT		7x9	7x9	7x9	7x9	7x9	7x9
	SERRATION		OFF	OFF	OFF	OFF	OFF	OFF
	EQP		OFF	OFF	OFF	OFF	OFF	OFF

Adjustment / Inspection Signal (3)

	PROGRAM NO.		13	14	15	16	17	18
	SIGNAL NAME		1/9WINDOW MAC II 832*624	VGA350	VGA400	800*600 @60	EVGA350 @84(VESA)	EVGA400 @84(VESA)
	RESOLUTION		832*624	640*350	640*400	800*600	640*350	640*400
	DOT CLOCK	(MHz)	57.283	25.175	25.175	40	31.5	31.5
	fh	(kHz)	49.72	31.47	31.47	37.88	37.86	37.86
	fv	(Hz)	74.55	70.09	70.09	60.32	84.13	84.13
H	CELL SIZE	(DOT)	8	8	8	8	8	8
	TOTAL	(DOT)	1152	800	800	1056	832	832
		(CHR)	144	100	100	132	104	104
		(uS)	20.11	31.78	31.78	26.40	26.41	26.41
	DISP	(DOT)	272	640	640	800	640	640
		(CHR)	34	80	80	100	80	80
		(uS)	4.75	25.42	25.42	20.00	20.32	20.32
	FRONT	(DOT)	312	16	16	40	24	24
		(uS)	5.45	0.64	0.64	1.00	0.76	0.76
	SYNC PULSE	(DOT)	64	96	96	128	40	40
		(uS)	1.12	3.81	3.81	3.20	1.27	1.27
	BACK	(DOT)	504	48	48	88	128	128
		(uS)	8.80	1.91	1.91	2.20	4.06	4.06
V	CELL SIZE	(H)	16	16	16	16	16	16
	TOTAL	(H)	667	449	449	628	450	450
		(mS)	13.414	14.268	14.268	16.579	11.886	11.886
	DISP	(H)	208	350	400	600	350	400
		(CHR)	13	21.875	25	37.5	21.875	25
		(mS)	4.183	11.122	12.711	15.840	9.244	10.565
	FRONT	(H)	209	37	12	1	35	9
		(mS)	4.203	1.176	0.381	0.026	0.924	0.238
	SYNC PULSE	(H)	3	2	2	4	3	3
		(mS)	0.060	0.064	0.064	0.106	0.079	0.079
	BACK	(H)	247	60	35	23	62	38
		(mS)	4.967	1.907	1.112	0.607	1.638	1.004
	INTERLACE		NON	NON	NON	NON	NON	NON
	POLARITY	(H/V)	NEG/NEG	POS/NEG	NEG/POS	POS/POS	POS/NEG	NEG/POS
	COMPOSITE SYNC		NEG					
	COMPOSITE VIDEO		GREEN					
	CHARACTER FONT		7x9	7x9	7x9	7x9	7x9	7x9
	SERRATION		OFF	OFF	OFF	OFF	OFF	OFF
	EQP		OFF	OFF	OFF	OFF	OFF	OFF

Adjustment / Inspection Signal (4)

	PROGRAM NO.		19	20	21	22	23	24
	SIGNAL NAME		XGA (8514/A)	800*600 @75	640*480 @85(VESA)	800*600 @85	1280*1024 @60	640*480 @100
	RESOLUTION		1024*768	800*600	640*480	800*600	1280*1024	640*480
	DOT CLOCK	(MHz)	44.9	49.5	36	56.25	108	45.00
	fh	(kHz)	35.52	46.88	43.27	53.67	63.98	53.07
	fv	(Hz)	43.48	75.00	85.01	85	60.02	100.13
H	CELL SIZE	(DOT)	8	8	8	8	8	8
	TOTAL	(DOT)	1264	1056	832	1048	1688	848
		(CHR)	158	132	104	131	211	106
		(uS)	28.15	21.33	23.11	18.63	15.63	18.84
	DISP	(DOT)	1024	800	640	800	1280	640
		(CHR)	128	100	80	100	160	80
		(uS)	22.81	16.16	17.78	14.22	11.85	14.22
	FRONT	(DOT)	8	16	32	32	48	32
		(uS)	0.18	0.32	0.89	0.57	0.44	0.71
	SYNC PULSE	(DOT)	176	80	48	64	112	80
		(uS)	3.92	1.62	1.33	1.14	1.04	1.78
	BACK	(DOT)	56	160	112	152	248	96
		(uS)	1.25	3.23	3.11	2.70	2.30	2.13
V	CELL SIZE	(H)	16	16	16	16	16	16
	TOTAL	(H)	817	625	509	631	1066	530
		(mS)	23.000	13.333	11.764	11.756	16.661	9.98
	DISP	(H)	768	600	480	600	1024	480
		(CHR)	48	37.5	30	37.5	64	30
		(mS)	21.620	12.800	11.093	11.179	16.005	9.045
	FRONT	(H)	0	1	1	1	1	6
		(mS)	0.000	0.021	0.023	0.019	0.016	0.113
	SYNC PULSE	(H)	8	3	3	3	3	6
		(mS)	0.225	0.064	0.069	0.056	0.047	0.113
	BACK	(H)	41	21	25	27	38	38
		(mS)	1.154	0.448	0.578	0.503	0.594	0.716
	INTERLACE		S&VIDEO	NON	NON	NON	NON	NON
	POLARITY	(H/V)	POS/POS	POS/POS	NEG/NEG	POS/POS	POS/POS	NEG/NEG
	COMPOSITE SYNC							
	COMPOSITE VIDEO							
	CHARACTER FONT		7x9	7x9	7x9	7x9	7x9	7x9
	SERRATION		OFF	OFF	OFF	OFF	OFF	OFF
	EQP		OFF	OFF	OFF	OFF	OFF	OFF

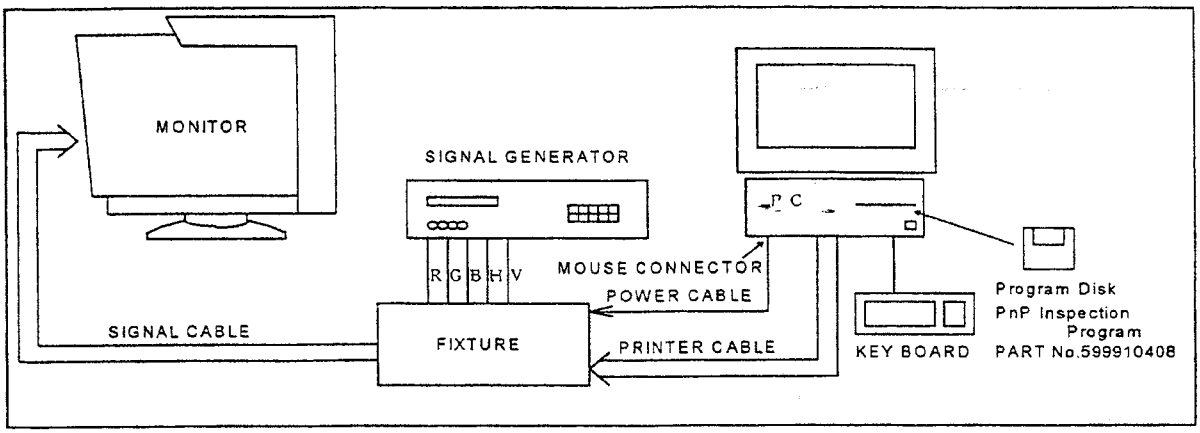
Adjustment / Inspection Signal (5)

	PROGRAM NO.		25	26				
	SIGNAL NAME		1024*768 @70	EDID				
	RESOLUTION		1024*768	720*685				
	DOT CLOCK	(MHz)	75	28.322				
	fh	(kHz)	56.48	31.47				
	fv	(Hz)	70.07	42.01				
H	CELL SIZE	(DOT)	8	9				
	TOTAL	(DOT)	1328	900				
		(CHR)	166	100				
		(uS)	17.71	31.78				
	DISP	(DOT)	1024	720				
		(CHR)	128	80				
		(uS)	13.65	25.42				
	FRONT	(DOT)	24	18				
		(uS)	0.32	0.64				
	SYNC PULSE	(DOT)	136	108				
		(uS)	1.81	3.81				
	BACK	(DOT)	144	54				
		(uS)	1.92	1.906				
V	CELL SIZE	(H)	16	14				
	TOTAL	(H)	806	749				
		(mS)	14.272	23.801				
	DISP	(H)	768	685				
		(CHR)	48	48.93				
		(mS)	13.599	21.77				
	FRONT	(H)	3	14				
		(mS)	0.053	0.44				
	SYNC PULSE	(H)	6	3				
		(mS)	0.106	0.095				
	BACK	(H)	29	47				
		(mS)	0.513	1.494				
	INTERLACE		NON	NON				
	POLARITY	(H/V)	NEG/NEG	NRG/NEG				
	COMPOSITE SYNC							
	COMPOSITE VIDEO							
	CHARACTER FONT		7x9	7x9				
	SERRATION		OFF	OFF				
	EQP		OFF	OFF				

[D] Inspection of PnP communication and Writing EDID to EEPROM and inspection of PnP communication

1 . A construction of System

This system is connected as shown below.



2. Starting method

1) Input Signal

Input signal must be separate sync and two kinds of signals must be prepared.

One is the signal with vertical syncronization frequency of 42Hz, and another is the signal with vertical syncronization frequency of between 55Hz and 25kHz. Horizontal syncronization frequency should be set to reasonable value(example 31.5kHz).

2) Power ON procedure

·Power on PC and put the floppy disk for PnP Inspection into PC.

·Turn on Fixture.

·Make sure that fixture's LED flashes on and off.

·Turn on signal generator and monitor.

3) Starting PC Software

·Inspection of PnP communication

To check the PnP communication for M700, EDID file name is M700.

Type "P M700" on DOS command line and press return key.

·Writing EDID to EEPROM and inspection of PnP communication

To write EDID to EEPROM and check the PnP communication of M700, type "WP M700" on DOS command line and press return key.

3. Operation

·The operation should be performed according to the screen message.

·When the message of "Please input Serial Number ." is displayed, type a serial number and hit return key.

The message of "Input Serial Number is OK ?" is displayed. If the serial number is correct, press Y key, otherwise press N key and input the correct serial number.

If you pressed Y key, the EDID data in which the serial number was editted is displayed. Check the data and press N key.

·When the message of "Please set Vsync to 42Hz." is displayed, set the signal generator to the signal with the vertical syncronization frequency of 42Hz. When the message of "Please set Vsync to over 55Hz." is displayed, set the signal generator to the signal with vertical syncronization frequency of between 55Hz and 25kHz.

·The message of "Normally Complete" means that the writing EDID data or PnP inspection was completed normally. "Error" message means that the writing EDID data or PnP inspection did not process correctly.

·When the PnP inspection is complete EDID data would be displayed and if the read EDID data differ from the original EDID data, the different bytes would be displayed in red.

·For the details of error messeges, see the message displayed at the bottom right on the screen. The explanations of the messages are shown on section 4.

·After writing EDID data or inspection of DDC2B, monitor can not be communicated by DDC1. In this case, turn the monitor off and on. The DDC1 communication check can be performed again.

·Make sure that fixture's LED flashes on and off before writing EDID data and inspecting DDC1 and DDC2B. If the fixture's LED does not flash on and off, turn the monitor and the fixture off and then power them on again.

4.Error Messages

·Start Bit Error

This message is displayed when the start bit is not "H" while sending data from PC to MPU on the fixture.

This error will be caused by noise etc. on the line.

·Command Error

This message is displayed when the different command is sent from PC to MPU on the fixture.

·Hardware Error

This message means that the PC didn't recognize ACK command sent from the MPU on the fixture.

·File Open Error

This message means that the input EDID file name is wrong.

·Command line Switch Error

This message means that the input communication command is wrong.

·Parity Error

This message is displayed when the MPU on the fixture recognized that the parity bit is in correct. This error will be caused by noise etc. on the line.

·EDID Data Error

This message is displayed when the null bit was not detected in EDID data read by DDC1 communication.

·EDID Data Sort Error

This message is displayed when the header code was not detected in EDID data read by DDC1 communication.

·Time Out Error

This message is displayed when the PC did not recognize ACK commands sent from MPU within 10 msec after PC had sent communication command or EDID data.

If this error occured, check the connection on PC, fixture, and monitor.

·Data length is too short

This message is displayed when the input serial number is in complete.

·Data length is too long

This message is displayed when the input serial number has excessive numbers or letters.

5. EDID data file

An example of the EDID data file text is shown below. When you write or inspect EDID for a new monitor model that does not have a data file, create its data file according to the format shown below by using an editor software and save the file in an appropriate name to the floppy disk for PnP Inspection.

EDID-037

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
00	00	FF	FF	FF	FF	FF	FF	00	38	A3	05	43	01	01	01	01
10	*1	*2	01	01	0C	20	18	78	E8	A0	B2	A2	54	4C	9B	26
20	10	48	4F	FF	FE	80	01	01	01	01	01	01	01	01	01	01
30	01	01	01	01	01	01	62	2A	00	A0	51	00	2A	40	40	80
40	13	00	32	B6	10	00	00	1E	00	00	00	FD	00	37	78	1F
50	45	0C	00	0A	20	20	20	20	20	20	00	00	00	FC	00	4E
60	45	43	20	4D	37	30	30	0A	20	20	20	20	00	00	00	FF
70	00	*3													00	*4

INSPECTION

1. CRT

1-1. Inspection condition

i) Inspection shall be made on each color of white, red, green, blue and on appearance.
ii) Inspection shall be made more than 60 cm away from the screen.
iii) The ambient brightness must be less than 5 lm/m^2, and in the non-operating condition, the screen may be viewed under white light of 700 to 1000 lm/m^2 at the tube face.
iv) The division of zone is shown in Diagram.1-1.
v) Equivalent diameter of defect is indicated in terms of (long dia. + short dia.)/2.

1-2. Phosphor quality

Phosphor quality classify in accordance with the following table.

Contrast	Defect types
High contrast	50% or more of the phosphor is missing by clogging, or missing red,green, blue phosphor,or dark dot and so on, High contrast defect by judgement of contrast comparator.
Middle contrast	25% to less than 50% of the phosphor missing by clogging,or missing red, green, blue phosphor , or dark dot and so on, middle contrast defect by judgement of contrast comparator. Discolored stripe defect.
Low contrast	Irregular coating,Stain and so on, low contrast defect by judgement of contrast comparator.

1-3. Division of zone

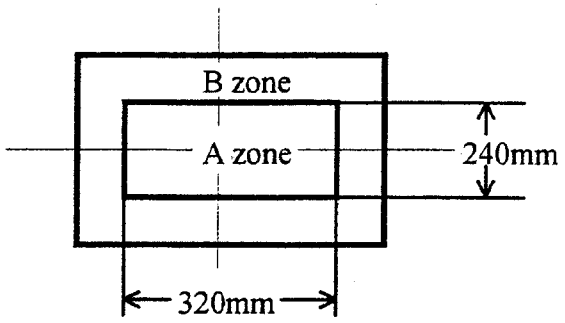


Diagram 1-1 Division of zone

1-4. Limits

(1) High contrast defect

	Type of defect	Allowable number [pcs]			Minimum Separation [mm]		
		A Zone	B Zone	SUM	A Zone	B Zone	SUM
A	1 Trio (75%or more)	1	1	1	30	20	30
B	1 Trio (50□ less than 75%)	2	2	2	30	20	30
C	A+B	2	2	2	30	20	30
D	3 or more missing adjacent stripes of same color	0	1	1			
E	2 missing adjacent stripes of same color	1	2	3	50	20	50
F	2 missing adjacent stripes of different color	1	2	3			
G	1 missing stripe	6 each color	8 each color	8			

(2) Middle contrast defect

Type of defect	Allowable number [pcs]			Minimum Separation [mm]
	A Zone	B Zone	SUM	
3 adjacent stripe	1	2	2	20
2 adjacent stripe	3	6	5	20
1 stripe	Unlimited (provided it isn't crowded.)			

(3) Low contrast defect

A Zone	Equivalent diameter of gathering of low contrast defect shall not exceed 13mm.
A fault in B Zone and also on the edge of A Zone	Equivalent diameter of gathering of low contrast defect shall not exceed 50mm.

(4) CRT face plate defect

valve defect

	Blisters [mm]	Opaque spots and closed Blisters[mm]	Allowable number			Minimum separation[mm]
			A Zone	B Zone	SUM	
Defect in a Φ50mm	0.25~0.40	0.20~0.60	0.1~0.2	0.1~0.3	2	12.7
Large fault	0.41~0.60	0.41~0.60	1	1	2	57
	0.61~	0.61~	0	0	0	—

elongated closed blisters

	A Zone	B Zone
Width [mm]	0.10~0.20	0.10~0.30
Maximum length [mm]	4	6

(5) Scratches

(A scratch of depth formed linearly from other object.)

Width [mm]	Allowable Length of a scrath [mm]
More than 0.10	Rejected
0.05 to 0.09	Not more than 38mm
Less than 0.05	4

If the scratch can catch the edge of a nail, then it is to be rejected.

(6) AR coating defect (stain, coating peeled, etc.)

Equivalent Dia of Blemishes [mm]	Max.Allowable Number		Min.Allowable Separation [mm]
	Zone A	Zone B	
0.91 ~ 1.50	5	-	40
less than 0.91	unlimited		-

(7) AR coatiog's surface wound (Scratches)

Width [mm]	Allowable Length [mm]
More than 0.16	rejected
0.11 ~ 0.15	20
less than 0.11	unlimited

1-5. Reflected color

The reflected color at center of screen shall be between the two limit samples (red limit, blue limit).

Inspection condition

i) The fluorescent lamp shall be placed at back above of inspector.

ii) Compare the reflected color at the screen center of mass-production line setwith the limit samples.

The angle between light from lighting source and reflected light shall be as small as possible.

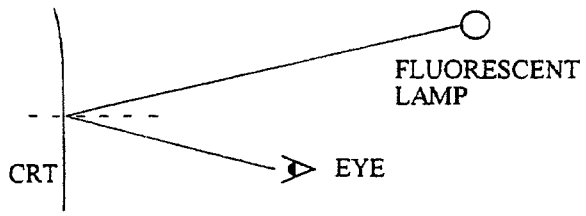


Fig.1-2 Reflected color

TROUBLE SHOOTING

Refer to the User Manual's trouble shooting section before using this chart.

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TROUBLE SHOOTING

1. NO RASTER

Check the 195V line
Check the 80V line

Measure the voltage of both ends of C654 and the voltage of C658 on the MAIN PWB(PWE-460).
The voltage of both ends of C654 will be approximately 195V.
The voltage of both ends of C658 will be approximately 80V.

Failed

Check resistance between Q561's collector and emitter when power supply is off

About 0 ohm — Q561,D562,D561,Q5G1,D5G3,C5G1,C5G3 may have failed

Other — Check the switching regulator circuit on the MAIN PWB. Refer to item 11.

Passed

Check the 14V line

Measure the voltage of both ends of C662 on the MAIN PWB .
The voltage of both ends of C662 should be approximately 14V.

Failed — IC303,IC361,IC401,IC5H1,IC5H2Q2001,ZD2002 and ZD2003 on the MAIN PWB, or the SUB PWB(PWE-461B) may have failed.

Passed

Check the IPM STATE.

Check the Power indicator color. It should be green.If the it is not green, the PMS state shift from "ON" mode to other mode.

Failed — Refer to PMS INCORRECT OPERATION OR FAILURE of item 21

Passed(GREEN)

Check the protector operation

Measure the voltage between point Q2006's base and emitter. The voltage should be 0V. If the voltage is about 0.7V,protector turns on.

Failed (Turn ON) — Q2001,ZD2002,ZD2003 may have failed Also refer to HIGH VOLTAGE PROTECTOR INCORRECT OPERATION OR FAILURE of item 9

Check the high voltage operation

Measure the high voltage. CAUTION:The high voltage for this circuit is approximately 25kV.

Failed — Check the high voltage circuit. Refer to item 3

Passed

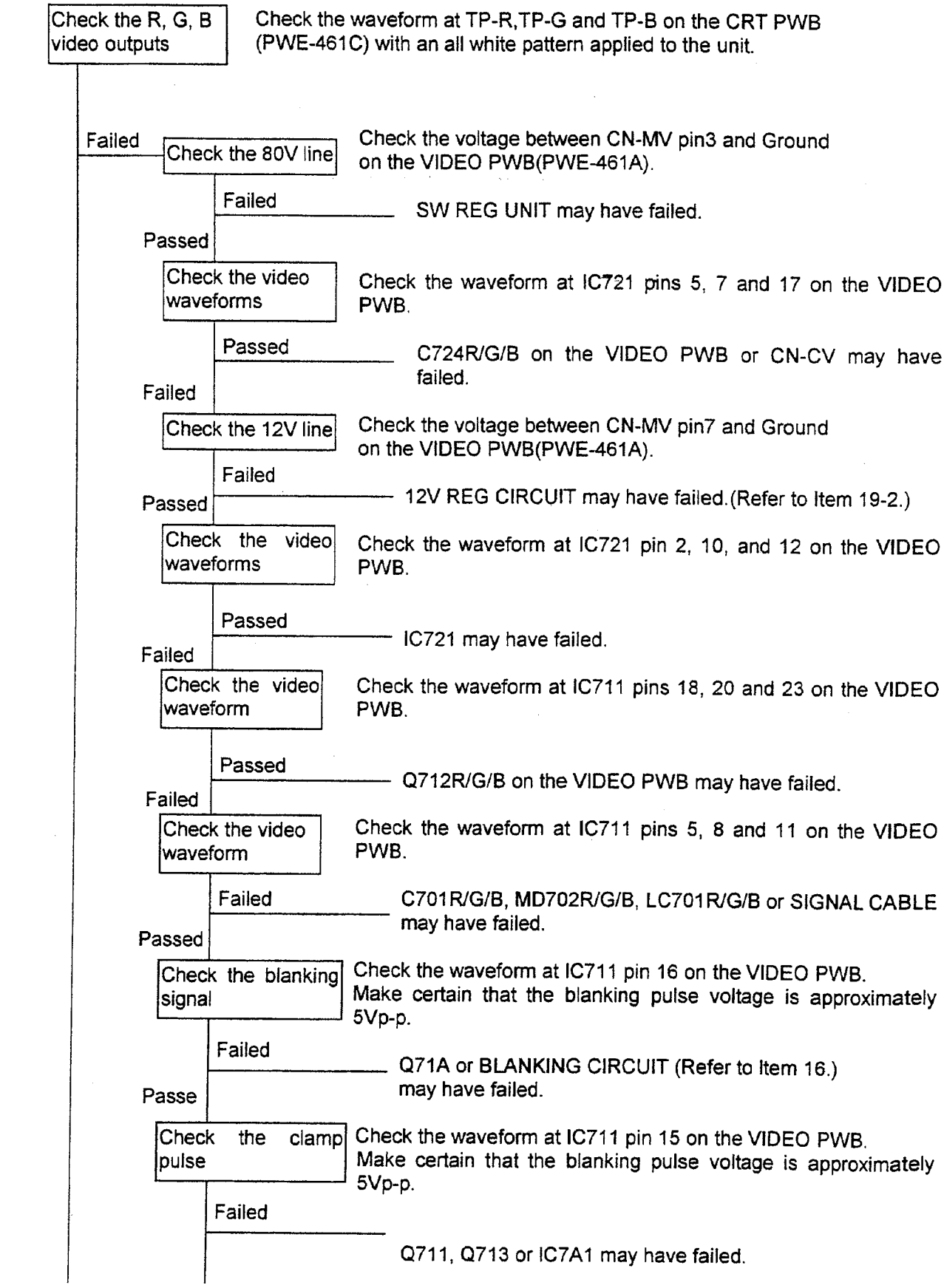
Check the screen voltage

Measure the screen voltage on the CRT PWB(PWE-461C).
TP-SC voltage should be apporoximately 635V to 665V.

Failed — Screen voltage too Low of FBT(T5R1), the CRT socket (CN-CRT) or CRT may have failed.

The CRT may have failed.

2. ABNORMAL IMAGE OR RASTER BRIGHTNESS (Too dark or Too bright)


Check the R, G, B video outputs
Check the waveform at TP-R,TP-G and TP-B on the CRT PWB (PWE-461C) with an all white pattern applied to the unit.
Failed
Check the 80V line
Check the voltage between CN-MV pin3 and Ground on the VIDEO PWB(PWE-461A).
Failed
SW REG UNIT may have failed.
Passed
Check the video waveforms
Check the waveform at IC721 pins 5, 7 and 17 on the VIDEO PWB.
Passed
C724R/G/B on the VIDEO PWB or CN-CV may have failed.
Failed
Check the 12V line
Check the voltage between CN-MV pin7 and Ground on the VIDEO PWB(PWE-461A).
Failed
Passed
12V REG CIRCUIT may have failed.(Refer to Item 19-2.)
Check the video waveforms
Check the waveform at IC721 pin 2, 10, and 12 on the VIDEO PWB.
Passed
IC721 may have failed.
Failed
Check the video waveform
Check the waveform at IC711 pins 18, 20 and 23 on the VIDEO PWB.
Passed
Q712R/G/B on the VIDEO PWB may have failed.
Failed
Check the video waveform
Check the waveform at IC711 pins 5, 8 and 11 on the VIDEO PWB.
Failed
C701R/G/B, MD702R/G/B, LC701R/G/B or SIGNAL CABLE may have failed.
Passed
Check the blanking signal
Check the waveform at IC711 pin 16 on the VIDEO PWB. Make certain that the blanking pulse voltage is approximately 5Vp-p.
Failed
Q71A or BLANKING CIRCUIT (Refer to Item 16.) may have failed.
Passe
Check the clamp pulse
Check the waveform at IC711 pin 15 on the VIDEO PWB. Make certain that the blanking pulse voltage is approximately 5Vp-p.
Failed
Q711, Q713 or IC7A1 may have failed.
CONTINUE
CONTINUE

CONTINUE CONTINUE

Check the contrast control voltage

Check the contrast voltage at IC711 pin 13 on the VIDEO PWB. Make certain that the contrast voltage is approximately 1.6-2.1V, when the contrast is maximum.

Failed — CONTRAST USER CONTROL CIRCUIT may have failed. (Refer to Item 14-2.)

Passed — IC711 on the VIDEO PWB may have failed.

Passed

Check the R, G, B video outputs

Make certain that the voltages at TP-R/G/B on the CRT PWB are approximately 90-160V .

Failed

Check the 195V line

Make certain that the voltage between C745 positive lead and ground on the CRT PWB is approximately 195 V.

Failed — D741 or LC741on the VIDEO PWB or CN-MV may have failed.

Passed — BRIGHTNESS USER CONTROL CIRCUIT may have failed. (Refer to Item 14-1.)

Check the high voltage operation

Measure the high voltage. Caution : The high voltage for this unit will average between 24.8kV to 25.2kV.

Failed

Check the high voltage circuit. Refer to item 3.

Passed

Check the heater voltage

Measure the heater voltage on the CRT PWB.
CN-CV 3 pin voltage should be approximately 6V.

Failed

Check the 6V regulator circuit (Q7F1,ZD7F1,R7F1) or Switching Regulator circuit on the MAIN PWB. Refer to item 11.Or CN-CV may have failed.

Passed

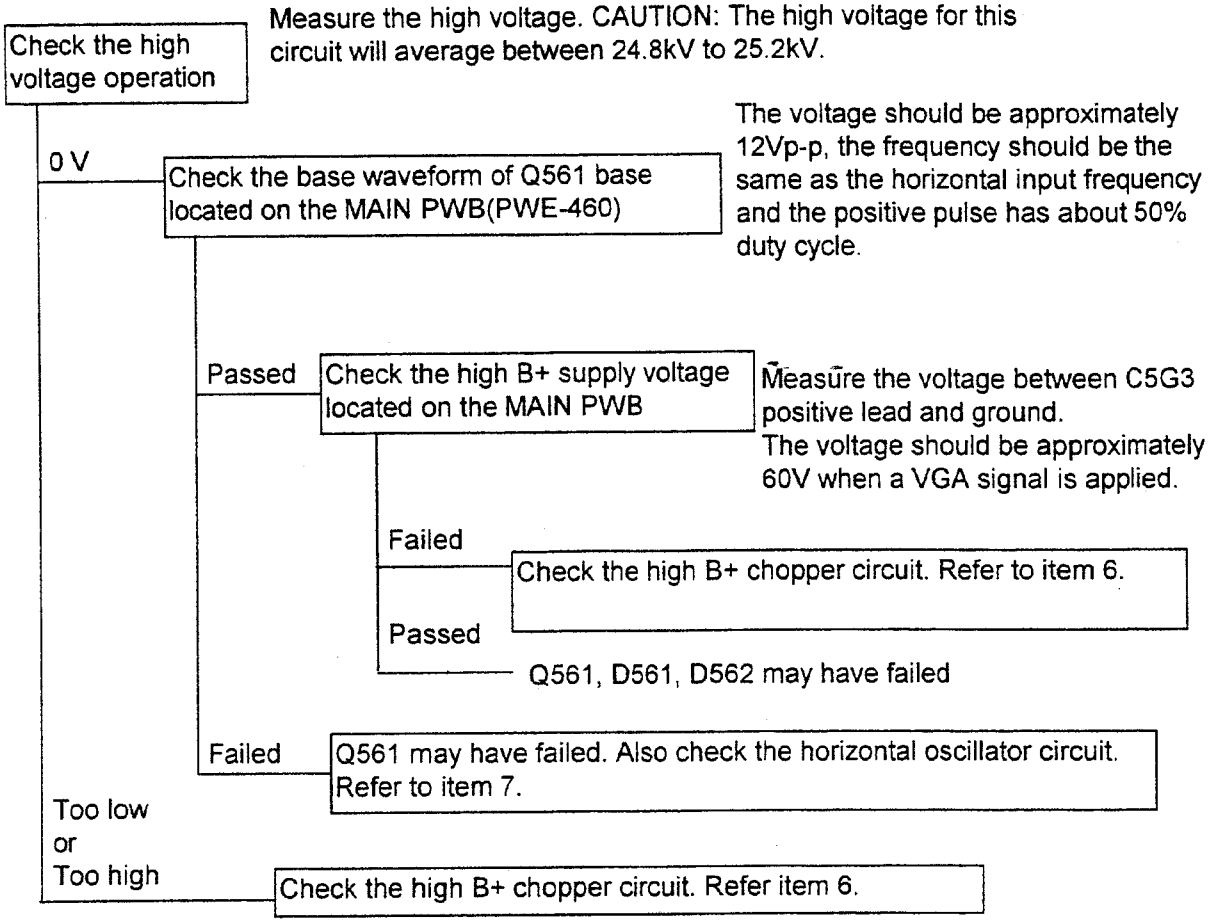
Check the screen control on the FBT

Measure the screen voltage on the CRT PWB.
TP-SC voltage should be approximately 635V to 665V.

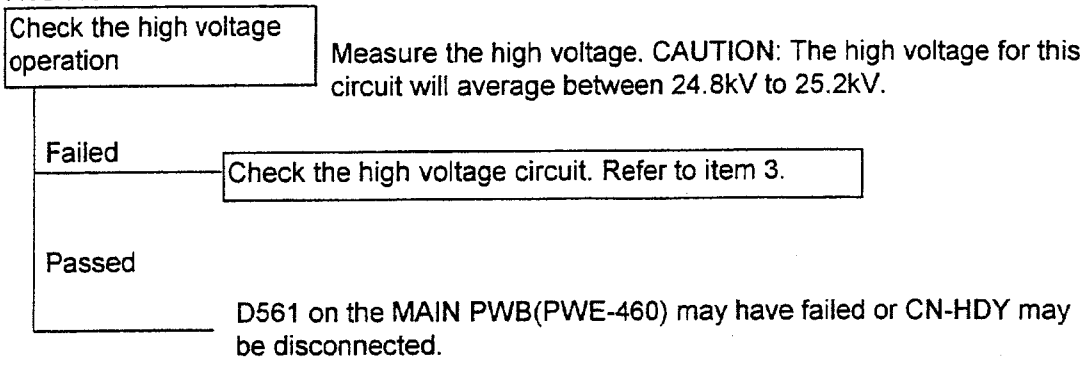
Too low — T5R1 on the MAIN PWB, CN-CRT on the CRT PWB or the CRT may have failed.

Passed — The CRT or CN-CRT may have failed.

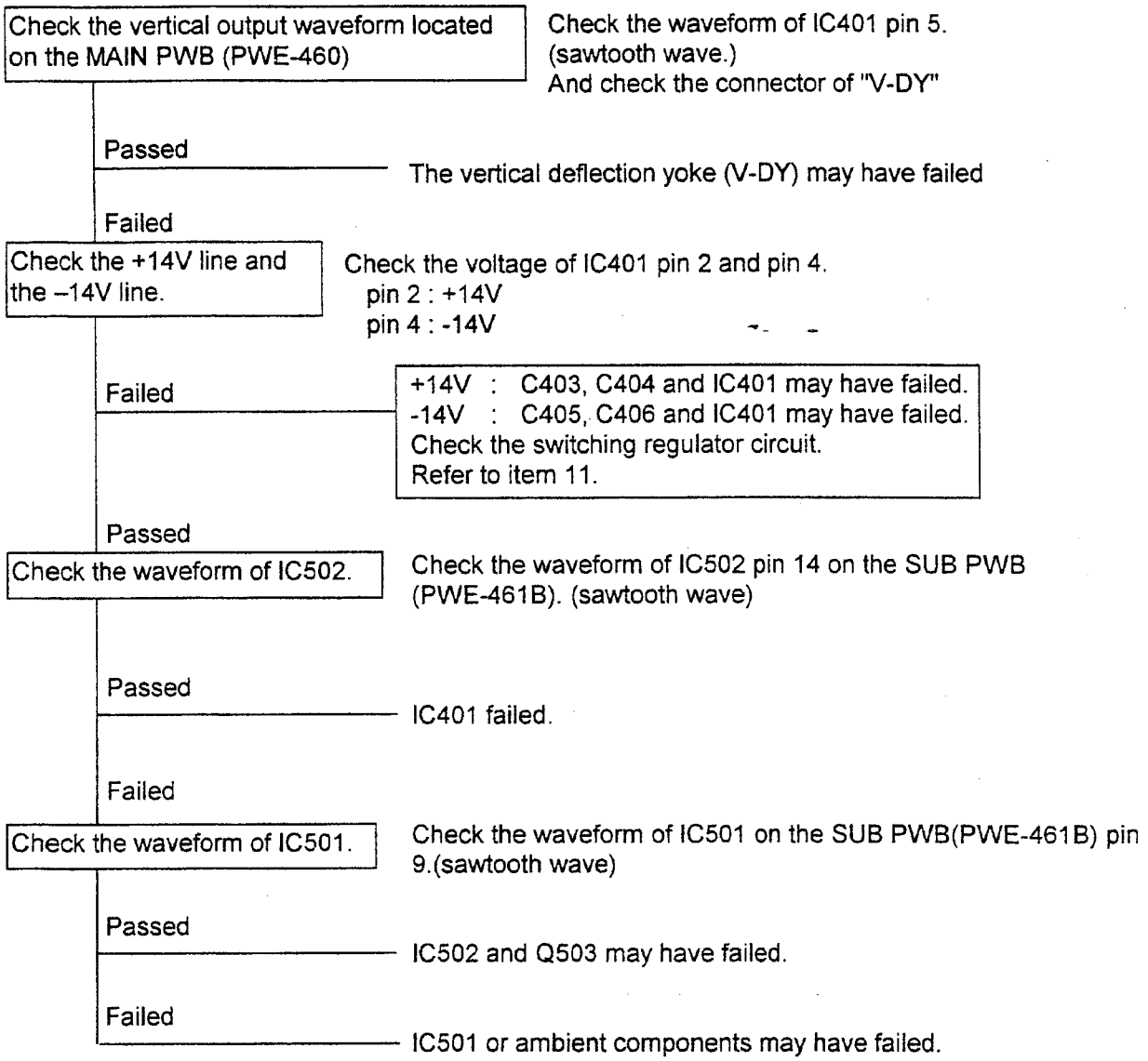
3. HIGH VOLTAGE FAILURE


Check the high voltage operation
Measure the high voltage. CAUTION: The high voltage for this circuit will average between 24.8kV to 25.2kV.
0 V
Check the base waveform of Q561 base located on the MAIN PWB(PWE-460)
The voltage should be approximately 12Vp-p, the frequency should be the same as the horizontal input frequency and the positive pulse has about 50% duty cycle.
Passed
Check the high B+ supply voltage located on the MAIN PWB
Measure the voltage between C5G3 positive lead and ground.
The voltage should be approximately 60V when a VGA signal is applied.
Failed
Check the high B+ chopper circuit. Refer to item 6.
Passed
Q561, D561, D562 may have failed
Failed
Q561 may have failed. Also check the horizontal oscillator circuit. Refer to item 7.
Too low
or
Too high
Check the high B+ chopper circuit. Refer item 6.

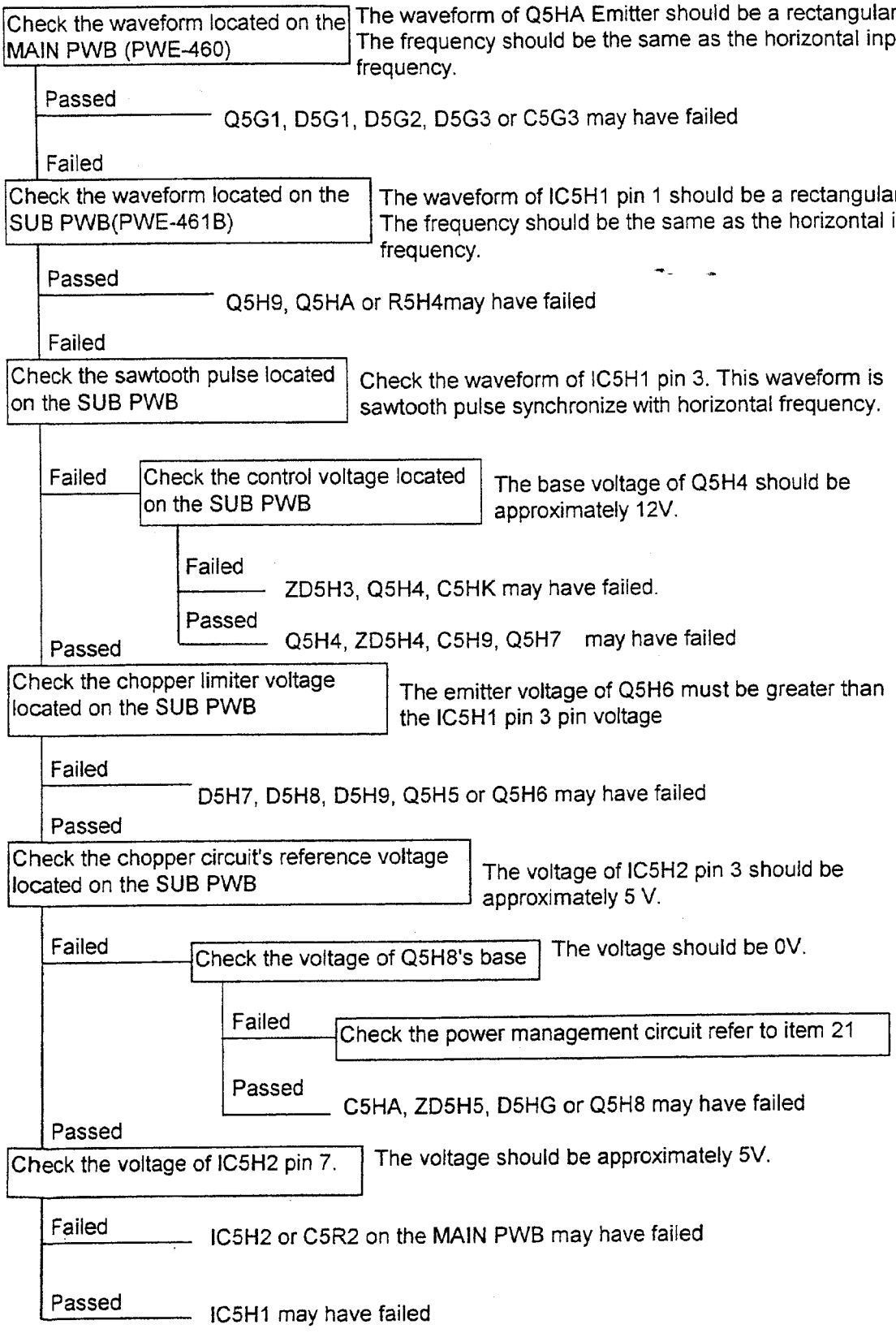
4. NO HORIZONTAL DEFLECTION


Check the high voltage operation
Measure the high voltage. CAUTION: The high voltage for this circuit will average between 24.8kV to 25.2kV.
Failed
Check the high voltage circuit. Refer to item 3.
Passed
D561 on the MAIN PWB(PWE-460) may have failed or CN-HDY may be disconnected.

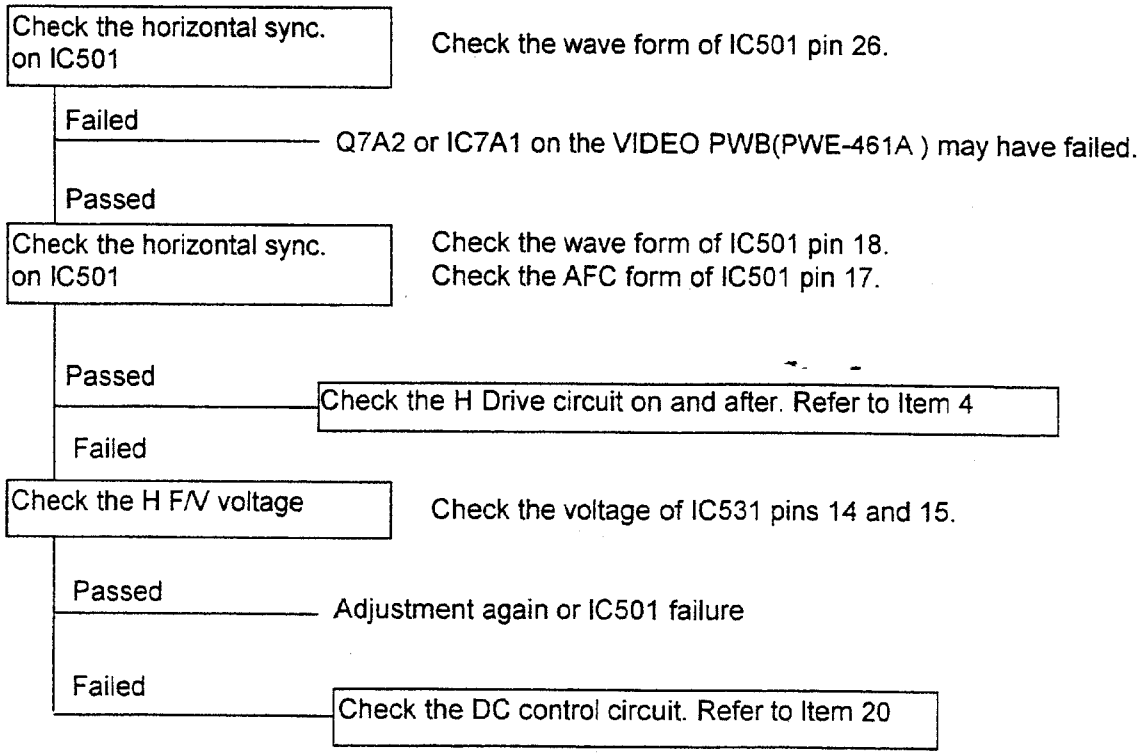
5. NO VERTICAL DEFLECTION


Check the vertical output waveform located on the MAIN PWB (PWE-460)
Check the waveform of IC401 pin 5. (sawtooth wave.) And check the connector of "V-DY"
Passed
The vertical deflection yoke (V-DY) may have failed
Failed
Check the +14V line and the –14V line.
Check the voltage of IC401 pin 2 and pin 4.
pin 2 : +14V
pin 4 : -14V
Failed
+14V : C403, C404 and IC401 may have failed.
-14V : C405, C406 and IC401 may have failed.
Check the switching regulator circuit.
Refer to item 11.
Passed
Check the waveform of IC502.
Check the waveform of IC502 pin 14 on the SUB PWB (PWE-461B). (sawtooth wave)
Passed
IC401 failed.
Failed
Check the waveform of IC501.
Check the waveform of IC501 on the SUB PWB(PWE-461B) pin 9.(sawtooth wave)
Passed
IC502 and Q503 may have failed.
Failed
IC501 or ambient components may have failed.

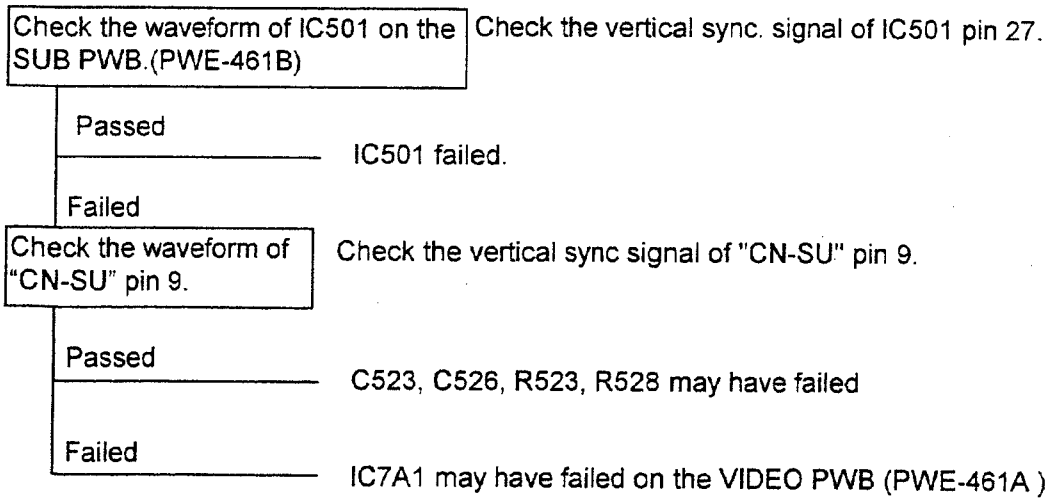
6. HIGH B+ CHOPPER CONTROL CIRCUIT OR THE DEFLECTION CIRCUIT B+ FAILURE


Check the waveform located on the MAIN PWB (PWE-460)
The waveform of Q5HA Emitter should be a rectangular wave. The frequency should be the same as the horizontal input frequency.
Passed
Q5G1, D5G1, D5G2, D5G3 or C5G3 may have failed
Failed
Check the waveform located on the SUB PWB(PWE-461B)
The waveform of IC5H1 pin 1 should be a rectangular wave. The frequency should be the same as the horizontal input frequency.
Passed
Q5H9, Q5HA or R5H4may have failed
Failed
Check the sawtooth pulse located on the SUB PWB
Check the waveform of IC5H1 pin 3. This waveform is sawtooth pulse synchronize with horizontal frequency.
Failed
Check the control voltage located on the SUB PWB
The base voltage of Q5H4 should be approximately 12V.
Failed
ZD5H3, Q5H4, C5HK may have failed.
Passed
Q5H4, ZD5H4, C5H9, Q5H7 may have failed
Passed
Check the chopper limiter voltage located on the SUB PWB
The emitter voltage of Q5H6 must be greater than the IC5H1 pin 3 pin voltage
Failed
D5H7, D5H8, D5H9, Q5H5 or Q5H6 may have failed
Passed
Check the chopper circuit's reference voltage located on the SUB PWB
The voltage of IC5H2 pin 3 should be approximately 5 V.
Failed
Check the voltage of Q5H8's base
The voltage should be 0V.
Failed
Check the power management circuit refer to item 21
Passed
C5HA, ZD5H5, D5HG or Q5H8 may have failed
Passed
Check the voltage of IC5H2 pin 7.
The voltage should be approximately 5V.
Failed
IC5H2 or C5R2 on the MAIN PWB may have failed
Passed
IC5H1 may have failed

7. UNSTABLE HORIZONTAL SYNCHRONIZATION


Check the horizontal sync. on IC501
Check the wave form of IC501 pin 26.
Failed
Q7A2 or IC7A1 on the VIDEO PWB(PWE-461A) may have failed.
Passed
Check the horizontal sync. on IC501
Check the wave form of IC501 pin 18.
Check the AFC form of IC501 pin 17.
Passed
Check the H Drive circuit on and after. Refer to Item 4
Failed
Check the H F/V voltage
Check the voltage of IC531 pins 14 and 15.
Passed
Adjustment again or IC501 failure
Failed
Check the DC control circuit. Refer to Item 20

8. UNSTABLE VERTICAL SYNCHRONIZATION


Check the waveform of IC501 on the SUB PWB.(PWE-461B)
Check the vertical sync. signal of IC501 pin 27.
Passed
IC501 failed.
Failed
Check the waveform of "CN-SU" pin 9.
Check the vertical sync signal of "CN-SU" pin 9.
Passed
C523, C526, R523, R528 may have failed
Failed
IC7A1 may have failed on the VIDEO PWB (PWE-461A)

9. HIGH VOLTAGE PROTECTOR INCORRECT OPERATION OR FAILURE

Before you check the voltage of Q5F1 collector and Q2001 collector, the power switch (SW1) should be turned OFF and ON again, (wait a few seconds the SW1 is turned ON again)

Check the voltage of Q5F1 collector on the MAIN PWB(PWE-460)

The voltage should be 0volts.
If the voltage about 195V, protector turns on.

Failed → Q5F1, R5F1, R5F2, C5F1,T5R1 may have failed

Passed

Check the voltage of Q2001 collector on the MAIN PWB, when contrast and bright controls is set minimum.

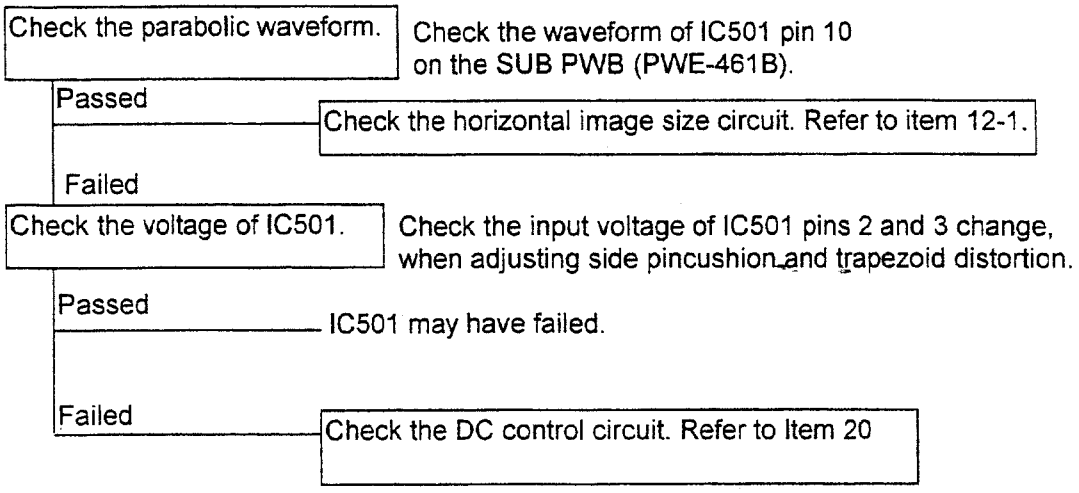
The voltage should be "0 V."
If the voltage about 14.0 V, protector turns on.

Failed → Q2001, ZD2002 or T5R1 may have failed.

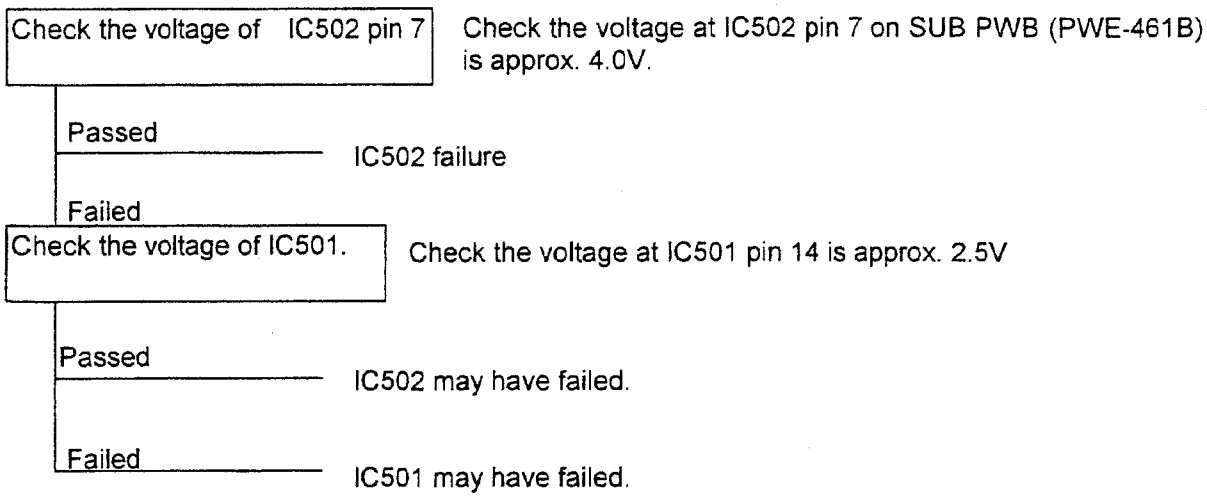
Passed → D2002, ZD2001 or Q2006, Q2007 may have failed.

10. DISTORTION FAILURE

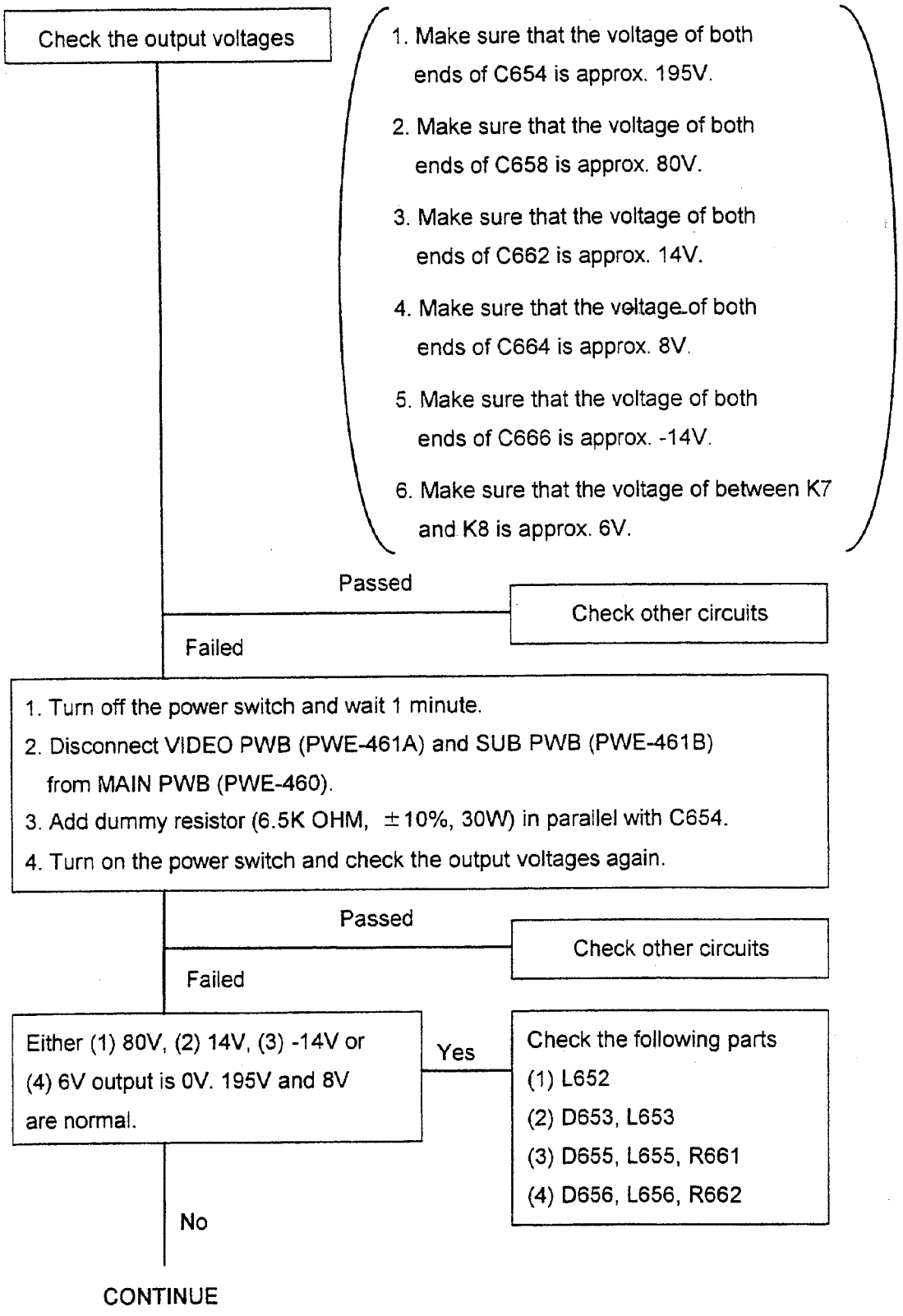
10-1 SIDE PINCUSHION AND VERTICAL TRAPEZOID DISTORTION CONTROL CIRCUIT FAILURE

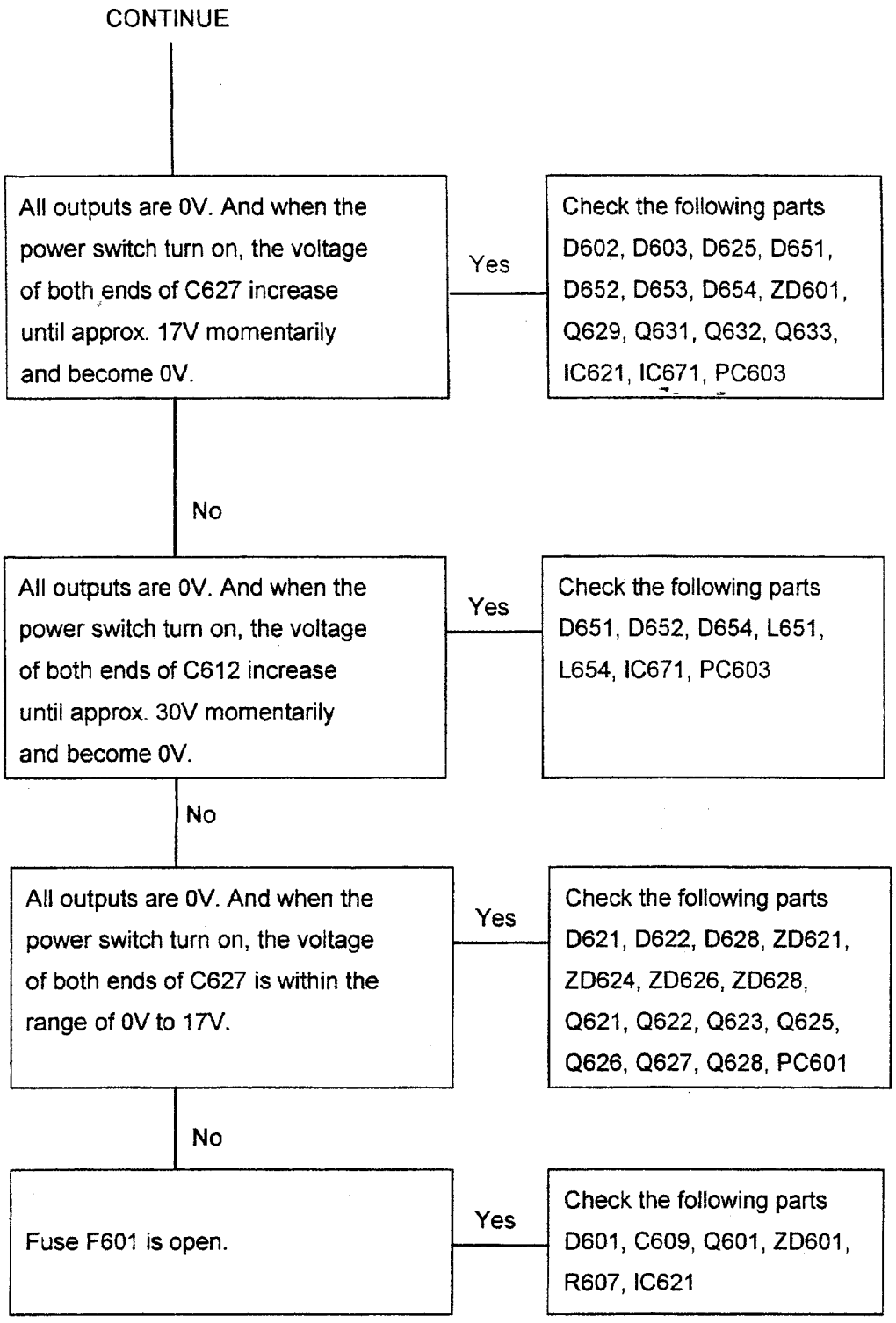

Check the parabolic waveform.
Check the waveform of IC501 pin 10 on the SUB PWB (PWE-461B).
Passed
Check the horizontal image size circuit. Refer to item 12-1.
Failed
Check the voltage of IC501.
Check the input voltage of IC501 pins 2 and 3 change, when adjusting side pincushion and trapezoid distortion.
Passed
IC501 may have failed.
Failed
Check the DC control circuit. Refer to Item 20

10-2 PARALLELOGRAM DISTORTION CONTROL CIRCUIT FAILURE


Check the voltage of IC502 pin 7
Check the voltage at IC502 pin 7 on SUB PWB (PWE-461B) is approx. 4.0V.
Passed
IC502 failure
Failed
Check the voltage of IC501.
Check the voltage at IC501 pin 14 is approx. 2.5V
Passed
IC502 may have failed.
Failed
IC501 may have failed.

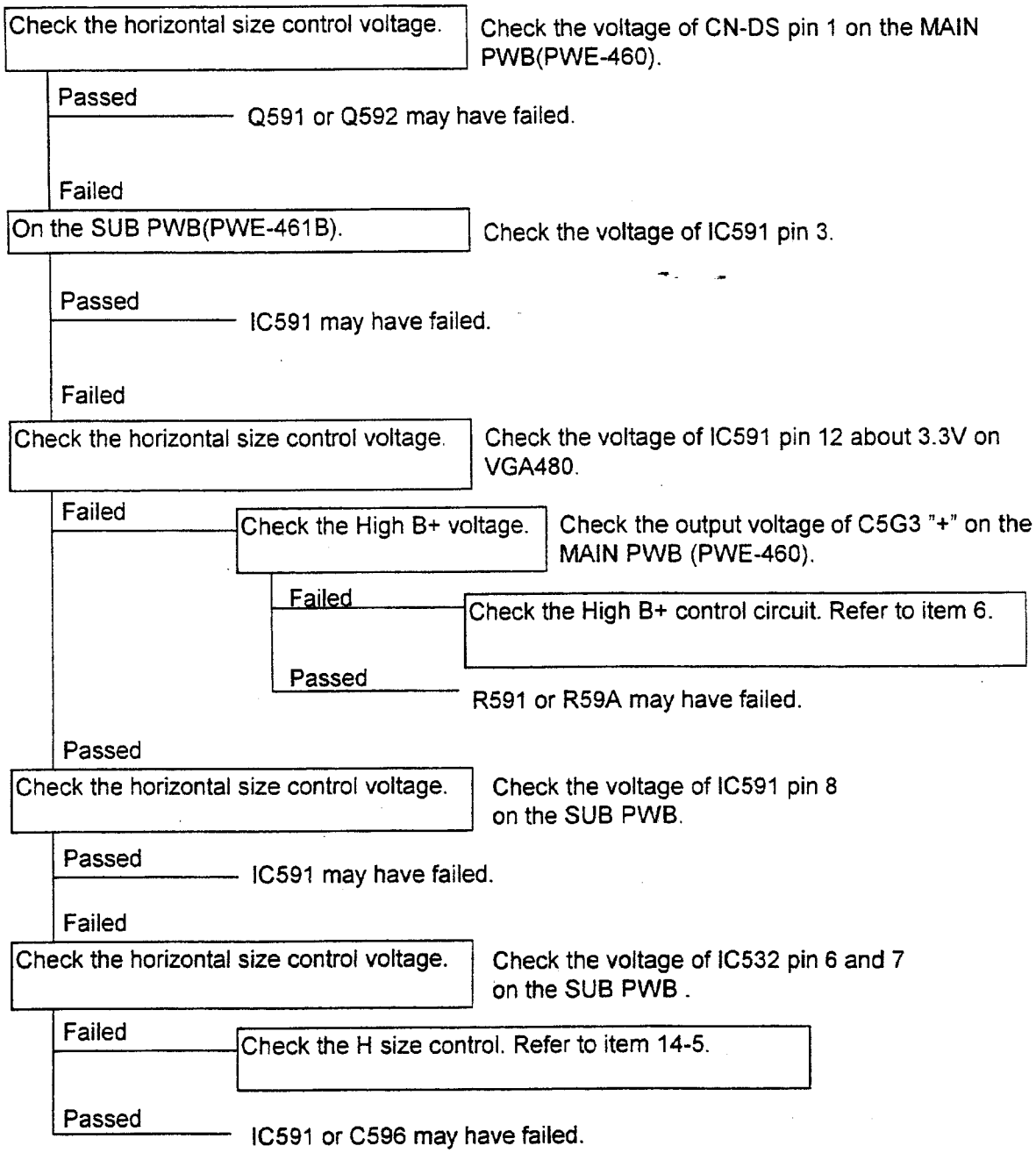
11. SWITCHING REGULATOR CIRCUIT FAILURE


Check the output voltages
1. Make sure that the voltage of both ends of C654 is approx. 195V.
2. Make sure that the voltage of both ends of C658 is approx. 80V.
3. Make sure that the voltage of both ends of C662 is approx. 14V.
4. Make sure that the voltage of both ends of C664 is approx. 8V.
5. Make sure that the voltage of both ends of C666 is approx. -14V.
6. Make sure that the voltage of between K7 and K8 is approx. 6V.
Passed
Check other circuits
Failed
1. Turn off the power switch and wait 1 minute.
2. Disconnect VIDEO PWB (PWE-461A) and SUB PWB (PWE-461B) from MAIN PWB (PWE-460).
3. Add dummy resistor (6.5K OHM, ±10%, 30W) in parallel with C654.
4. Turn on the power switch and check the output voltages again.
Passed
Check other circuits
Failed
Either (1) 80V, (2) 14V, (3) -14V or (4) 6V output is 0V. 195V and 8V are normal.
Yes
Check the following parts
(1) L652
(2) D653, L653
(3) D655, L655, R661
(4) D656, L656, R662
No
CONTINUE

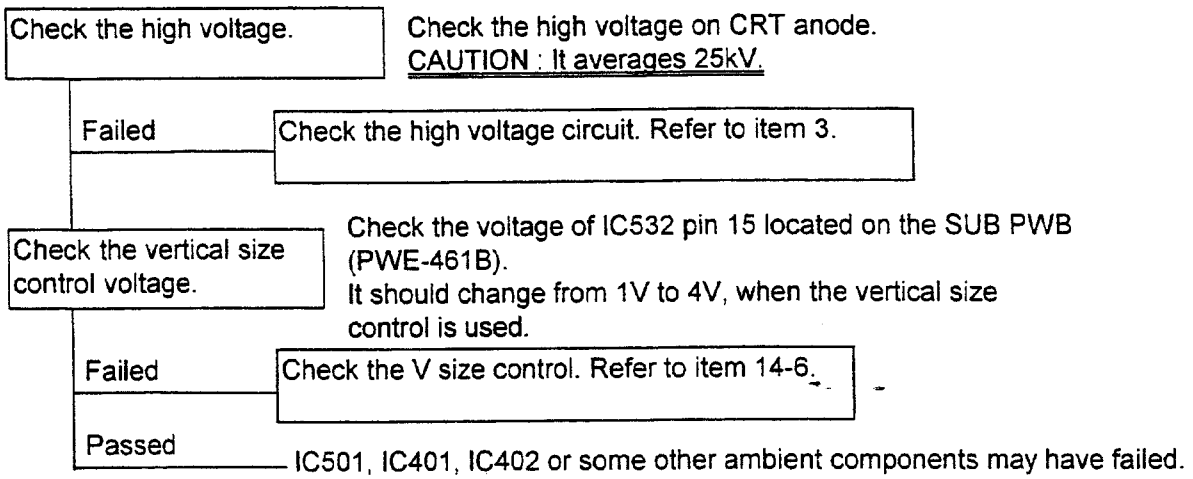

CONTINUE
All outputs are 0V. And when the power switch turn on, the voltage of both ends of C627 increase until approx. 17V momentarily and become 0V.
Yes
Check the following parts D602, D603, D625, D651, D652, D653, D654, ZD601, Q629, Q631, Q632, Q633, IC621, IC671, PC603
No
All outputs are 0V. And when the power switch turn on, the voltage of both ends of C612 increase until approx. 30V momentarily and become 0V.
Yes
Check the following parts D651, D652, D654, L651, L654, IC671, PC603
No
All outputs are 0V. And when the power switch turn on, the voltage of both ends of C627 is within the range of 0V to 17V.
Yes
Check the following parts D621, D622, D628, ZD621, ZD624, ZD626, ZD628, Q621, Q622, Q623, Q625, Q626, Q627, Q628, PC601
No
Fuse F601 is open.
Yes
Check the following parts D601, C609, Q601, ZD601, R607, IC621

12. IMAGE SIZE FAILURE

12-1 HORIZONTAL IMAGE SIZE FAILURE OR ABNORMAL FUNCTION

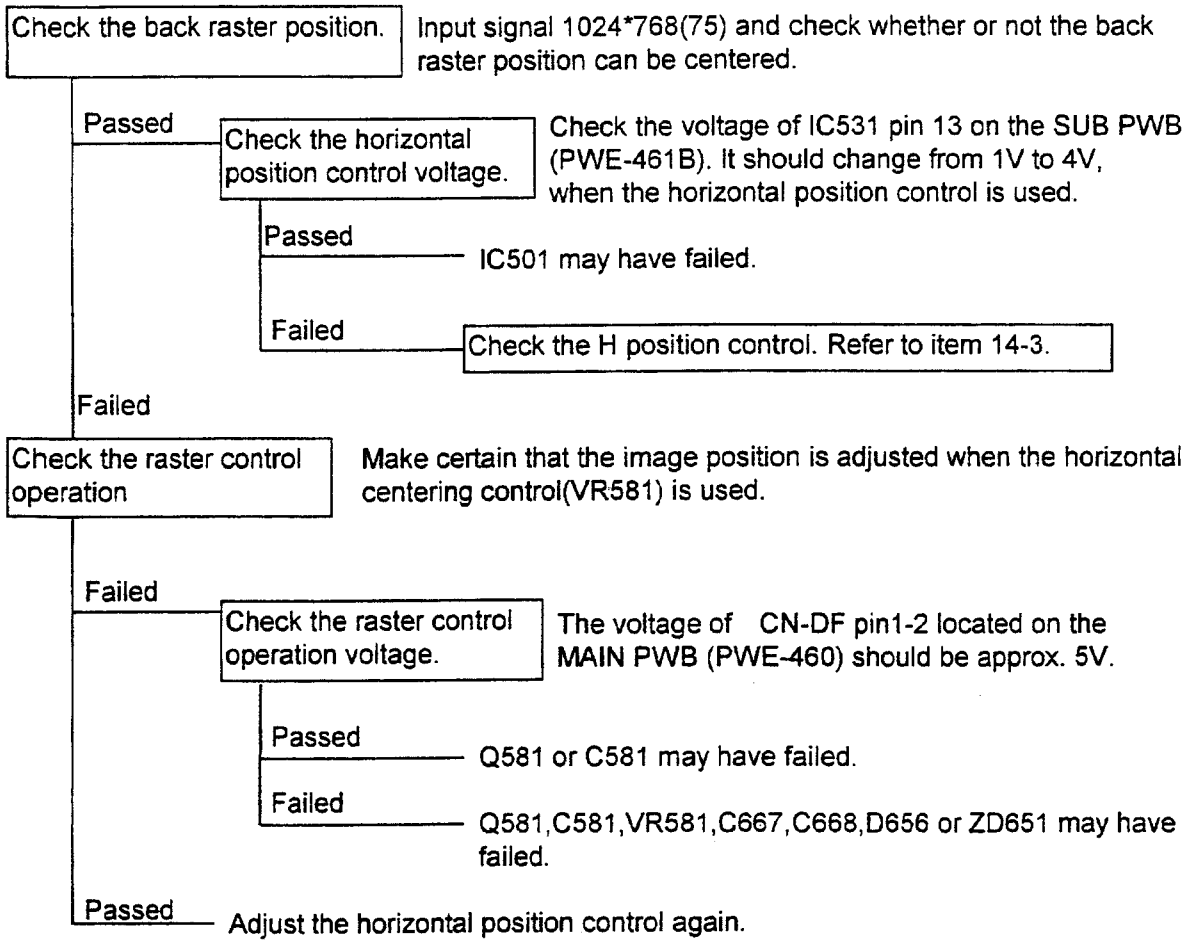

Check the horizontal size control voltage.
Check the voltage of CN-DS pin 1 on the MAIN PWB(PWE-460).
Passed
Q591 or Q592 may have failed.
Failed
On the SUB PWB(PWE-461B).
Check the voltage of IC591 pin 3.
Passed
IC591 may have failed.
Failed
Check the horizontal size control voltage.
Check the voltage of IC591 pin 12 about 3.3V on VGA480.
Failed
Check the High B+ voltage.
Check the output voltage of C5G3 "+" on the MAIN PWB (PWE-460).
Failed
Check the High B+ control circuit. Refer to item 6.
Passed
R591 or R59A may have failed.
Passed
Check the horizontal size control voltage.
Check the voltage of IC591 pin 8 on the SUB PWB.
Passed
IC591 may have failed.
Failed
Check the horizontal size control voltage.
Check the voltage of IC532 pin 6 and 7 on the SUB PWB .
Failed
Check the H size control. Refer to item 14-5.
Passed
IC591 or C596 may have failed.

12-2 VERTICAL IMAGE SIZE FAILURE OR ABNORMAL OPERATION


Check the high voltage.
Check the high voltage on CRT anode.
CAUTION : It averages 25kV.
Failed
Check the high voltage circuit. Refer to item 3.
Check the vertical size control voltage.
Check the voltage of IC532 pin 15 located on the SUB PWB (PWE-461B).
It should change from 1V to 4V, when the vertical size control is used.
Failed
Check the V size control. Refer to item 14-6.
Passed
IC501, IC401, IC402 or some other ambient components may have failed.

13. IMAGE POSITION FAILURE

13-1 HORIZONTAL IMAGE POSITION FAILURE


Check the back raster position.
Input signal 1024*768(75) and check whether or not the back raster position can be centered.
Passed
Check the horizontal position control voltage.
Check the voltage of IC531 pin 13 on the SUB PWB (PWE-461B). It should change from 1V to 4V, when the horizontal position control is used.
Passed
IC501 may have failed.
Failed
Check the H position control. Refer to item 14-3.
Failed
Check the raster control operation
Make certain that the image position is adjusted when the horizontal centering control(VR581) is used.
Failed
Check the raster control operation voltage.
The voltage of CN-DF pin1-2 located on the MAIN PWB (PWE-460) should be approx. 5V.
Passed
Q581 or C581 may have failed.
Failed
Q581,C581,VR581,C667,C668,D656 or ZD651 may have failed.
Passed
Adjust the horizontal position control again.

13-2 VERTICAL IMAGE POSITION FAILURE

Check the voltage of IC531 pin 13 located on the SUB PWB (PWE-461B). It should change from 1(V) to 4(V), when the vertical position control is used.

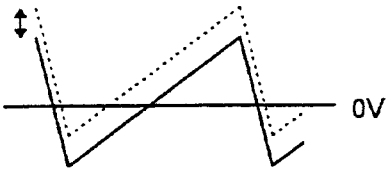
Check the vertical position control voltage.

Failed → Check the V size control. Refer to item 14-6.

Passed

Check the waveform of IC402 pin 7 located on the MAIN PWB (PWE-460) . It should move up/down, when vertical position control is used.

Check the sawtooth wave on IC402.



Failed → IC401 and IC402 may have failed.

Passed → IC401 may have failed.

14. USER CONTROL FAILURE

14-1 BRIGHTNESS USER CONTROL FAILURE

Check the brightness control voltage.

The IC751 pins 7,13 and 15 voltage on the the VIDEO PWB (PWE-461A) should increase when the OSM brightness bar is increased and decrease when the OSM brightness bar is decreased.

Failed — IC751 may have failed.

Passed

Check the brightness control voltage.

The voltage on the collector of-Q741R/G/B located on the VIDEO PWB (PWE-461A) should decrease when the OSM brightness bar is increased and increase when the OSM brightness bar is decreased.

The brightness does not change for all colors (Red, Green, Blue)

— LC741,D741,C745 or IC741 on the VIDEO PWB (PWE-461A) may have failed.

The brightness does not change for the Red color.

— Q741R,C744R,IC741 or D742R may have failed.

The brightness does not change for the Green color.

— Q741G,C744G,IC741 or D742G may have failed.

The brightness does not change for the Blue color.

— Q741B,C744B,IC741 or D742B may have failed.

14-2 CONTRAST USER CONTROL FAILURE

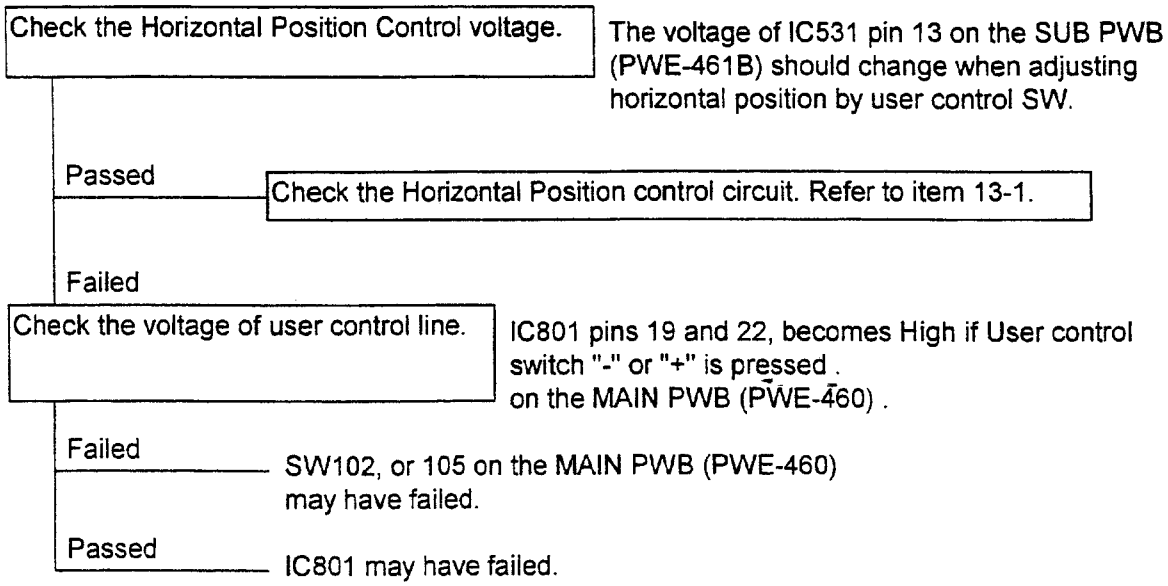
Check the contrast control's voltage.

The voltage of IC711 pin 13 on the VIDEO PWB (PWE-461A) should increase when the contrast control bar is increased and decrease when the control bar is decreased .

Passed — IC711 may have failed.

Failed — Q7E2, IC731, IC732 on the VIDEO PWB (PWE-461A), may have failed.

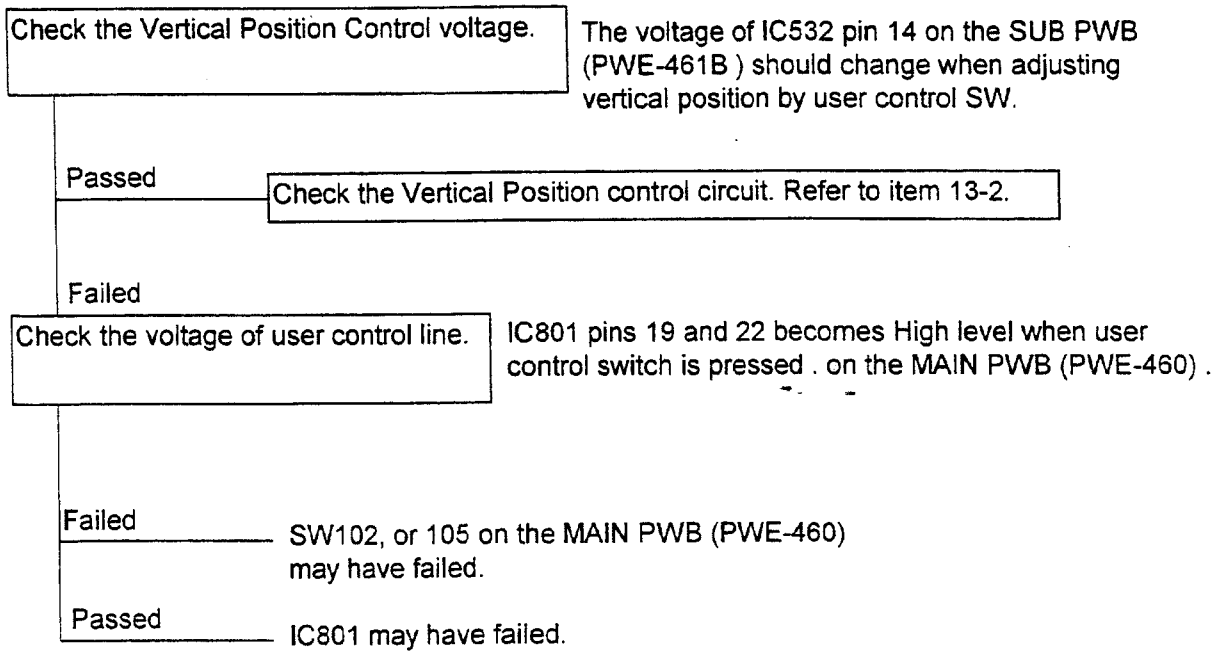
14-3 HORIZONTAL POSITION CONTROL FAILURE OR ABNORMAL OPERATION


Check the Horizontal Position Control voltage.
The voltage of IC531 pin 13 on the SUB PWB (PWE-461B) should change when adjusting horizontal position by user control SW.
Passed
Check the Horizontal Position control circuit. Refer to item 13-1.
Failed
Check the voltage of user control line.
IC801 pins 19 and 22, becomes High if User control switch "-" or "+" is pressed . on the MAIN PWB (PWE-460) .
Failed
SW102, or 105 on the MAIN PWB (PWE-460) may have failed.
Passed
IC801 may have failed.

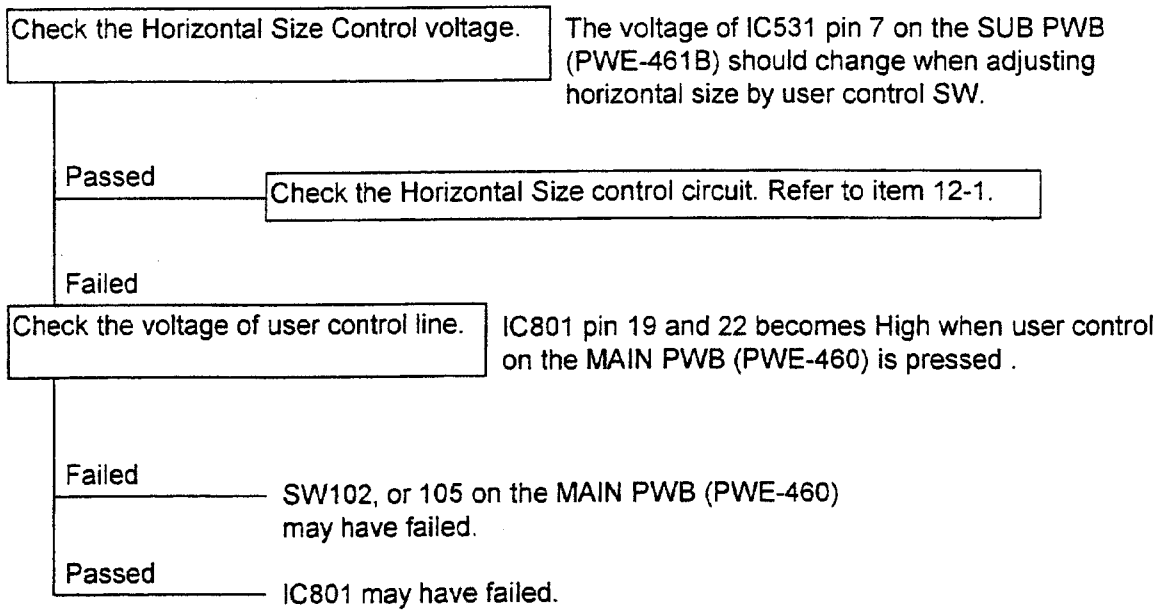
* "High" = 4.5 - 5 V

"Low" = approximately 0V

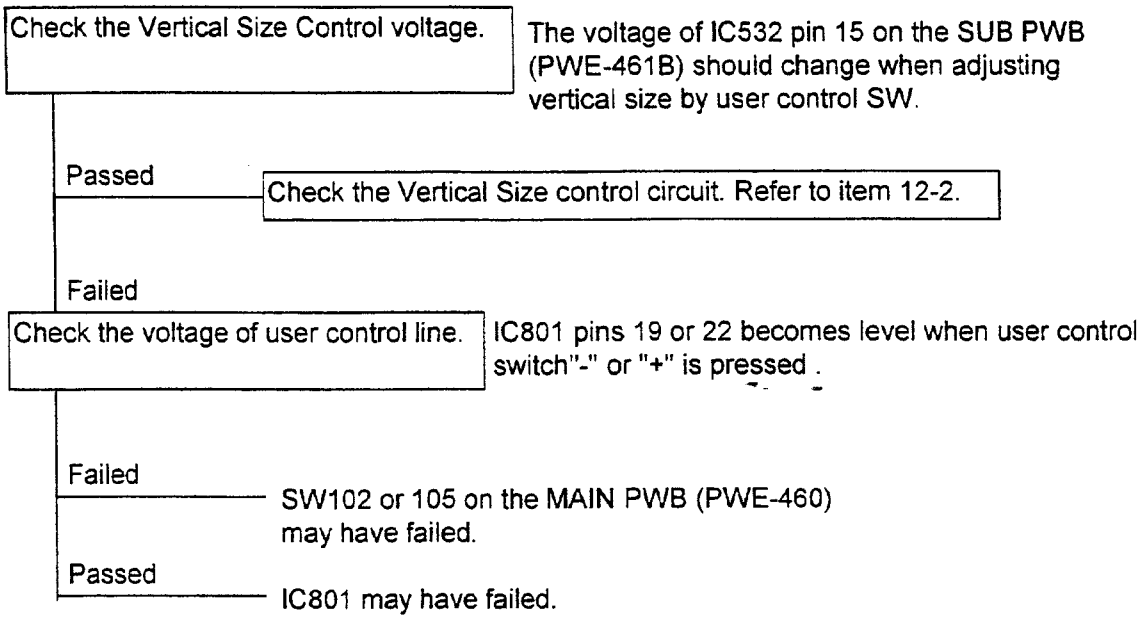
14-4 VERTICAL POSITION CONTROL FAILURE OR ABNORMAL OPERATION


Check the Vertical Position Control voltage.
The voltage of IC532 pin 14 on the SUB PWB (PWE-461B) should change when adjusting vertical position by user control SW.
Passed
Check the Vertical Position control circuit. Refer to item 13-2.
Failed
Check the voltage of user control line.
IC801 pins 19 and 22 becomes High level when user control switch is pressed . on the MAIN PWB (PWE-460) .
Failed
SW102, or 105 on the MAIN PWB (PWE-460) may have failed.
Passed
IC801 may have failed.

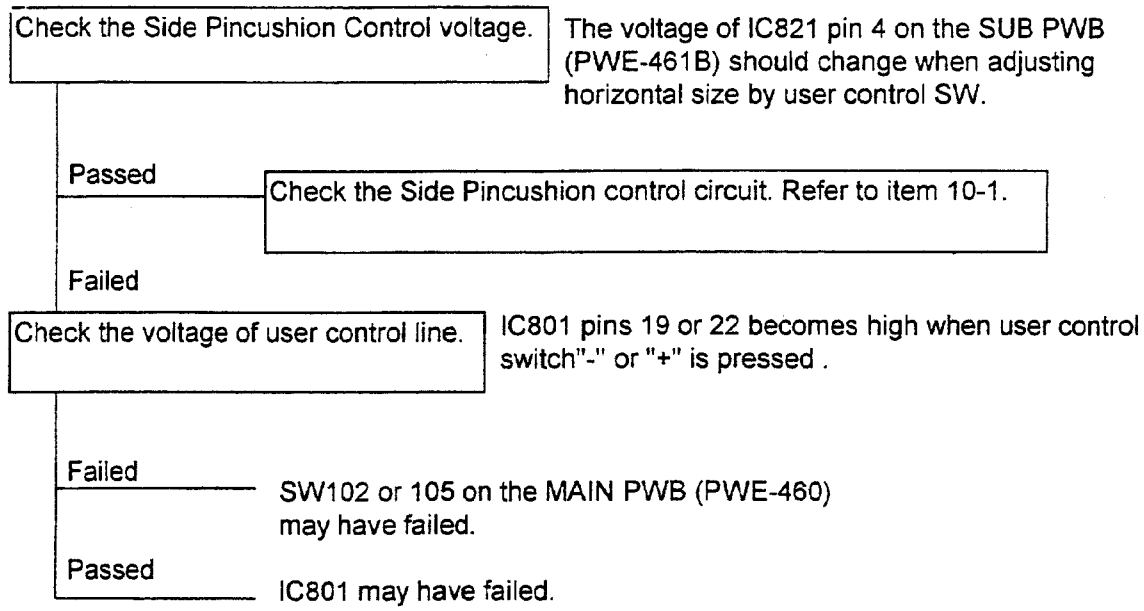
14-5 HORIZONTAL SIZE CONTROL FAILURE OR ABNORMAL OPERATION


Check the Horizontal Size Control voltage.
The voltage of IC531 pin 7 on the SUB PWB (PWE-461B) should change when adjusting horizontal size by user control SW.
Passed
Check the Horizontal Size control circuit. Refer to item 12-1.
Failed
Check the voltage of user control line.
IC801 pin 19 and 22 becomes High when user control on the MAIN PWB (PWE-460) is pressed .
Failed
SW102, or 105 on the MAIN PWB (PWE-460) may have failed.
Passed
IC801 may have failed.

14-6 VERTICAL SIZE CONTROL FAILURE OR ABNORMAL OPERATION


Check the Vertical Size Control voltage.
The voltage of IC532 pin 15 on the SUB PWB (PWE-461B) should change when adjusting vertical size by user control SW.
Passed
Check the Vertical Size control circuit. Refer to item 12-2.
Failed
Check the voltage of user control line.
IC801 pins 19 or 22 becomes level when user control switch"-" or "+" is pressed .
Failed
SW102 or 105 on the MAIN PWB (PWE-460) may have failed.
Passed
IC801 may have failed.

14-7 SIDE PINCUSHION CONTROL FAILURE OR ABNORMAL OPERATION


Check the Side Pincushion Control voltage.
The voltage of IC821 pin 4 on the SUB PWB (PWE-461B) should change when adjusting horizontal size by user control SW.
Passed
Check the Side Pincushion control circuit. Refer to item 10-1.
Failed
Check the voltage of user control line.
IC801 pins 19 or 22 becomes high when user control switch"-" or "+" is pressed .
Failed
SW102 or 105 on the MAIN PWB (PWE-460) may have failed.
Passed
IC801 may have failed.

14-8. MANUAL DEGAUSS FAILURE

Check the CN-Z connection on the MAIN PWB

- Failed → Connect the CN-Z.
- Passed

Check the Manual Degauss Control line on MAIN PWB.

IC801 pin 61 should have "High" logic in a few seconds, when manual degauss operate.

- Failed → IC801 may have failed.
- Passed → Q671, Q672, D658 or RL601 may have failed.

14-9. COLOR CONTROL FAILURE OR ABNORMAL OPERATION

Check the AccuColor control voltage on the VIDEO PWB.

The voltage of IC731 pins 7,13,15 should change when AccuColor control on the OSM MENU is adjusted.

Red	pin13
Green	pin 7
Blue	pin15

- Failed → IC731 or IC801 may have failed.
- Passed

Check the AccuColor control voltage on the VIDEO PWB.

The voltage of IC732 pins 7,8,14 should change when AccuColor control on the OSM MENU is adjusted.

Red	pin14
Green	pin 7
Blue	pin 8

- Failed → IC732 may have failed.
- Passed → IC711 may have failed.

15. ABNORMAL WHITE BALANCE

Readjust white balance. — Refer to the adjustment procedures.

- Passed — OK
- Failed at only MAC mode — IC7A1 on the VIDEO PWB (PWE-461A) may have failed.
- Failed at all modes — Check the Video circuit. Refer to item 2

16. BLANKING CIRCUIT FAILURE (Retrace lines are visible on the back raster)

Check the G1 waveform. — Check the waveform of CN-CV pin 2 on the CRT PWB (PWE-461C). The waveform should have a horizontal frequency pulse and a vertical frequency pulse.

- Passed — CRT, CN-CRT on the CRT PWB(PWE-461) may have failed. Or TP-SC on the CRT PWB voltage may be too high.
- Failed

Check the blanking pulse. — Check the emitter waveform of Q4E2 on the VIDEO PWB.

- Passed — D782, MD4E3, R4E7 or CN-CV may have failed .
- Failed

Check the blanking pulse. — Check the base waveform of Q4E2 .

- Passed — Q4E2 may have failed.
- Failed

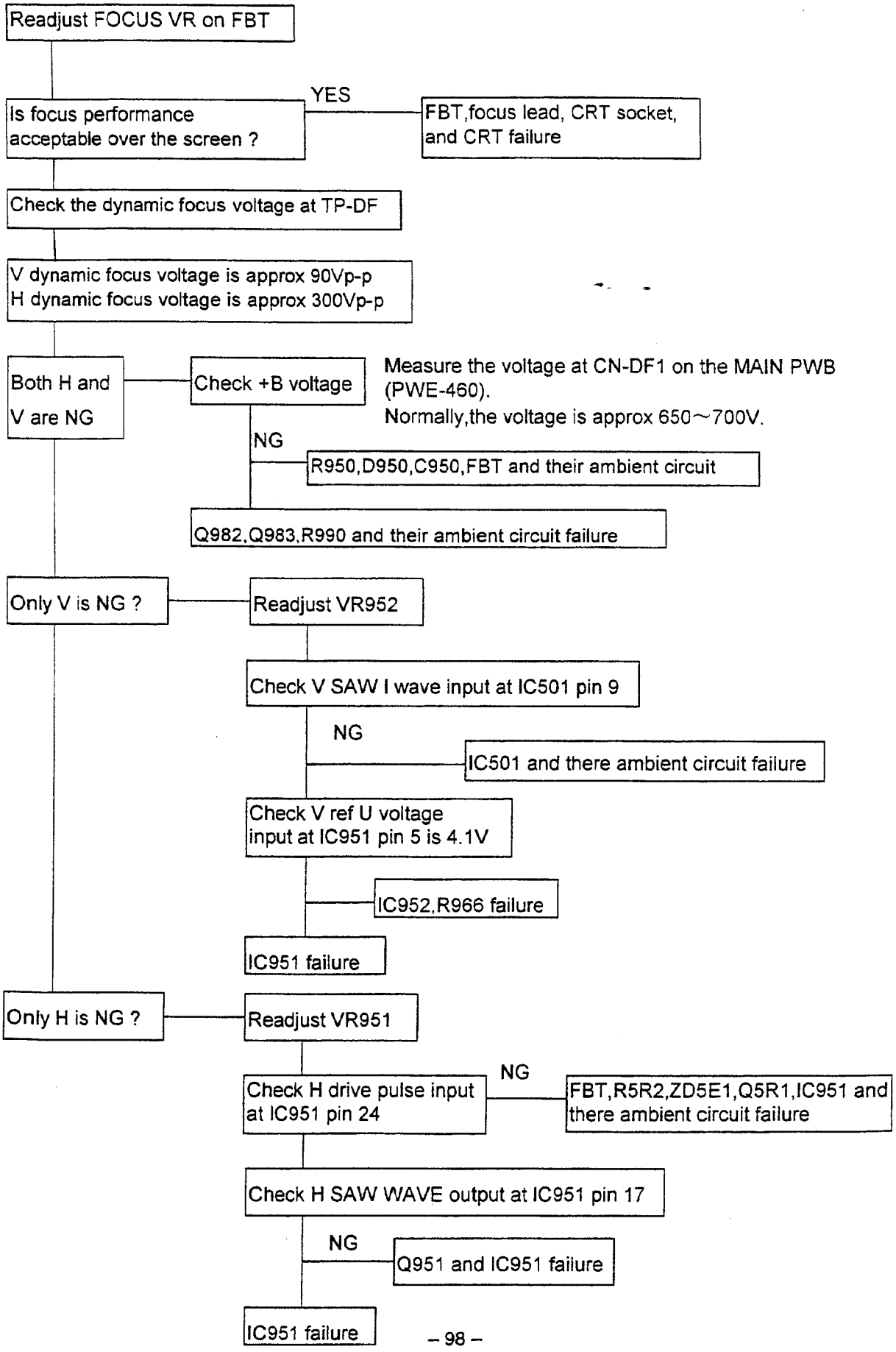
Check the blanking pulse. — Check the base waveform of Q4E1 and Q4E3.

- Passed — Q4E1, Q4E3 or D4E2 may have failed.
- Failed

Check the vertical deflection waveform. — Check the waveform of CN-SU pin 2 on the MAIN PWB.

- Passed — Q4E1, Q4E3, R4E8, R4EA, C4E4 or CN-MA may have failed.
- Failed — IC501 located on the SUB PWB (PWE-461B) may have failed.

17. POOR FOCUS


Readjust FOCUS VR on FBT
Is focus performance acceptable over the screen ?
YES
FBT,focus lead, CRT socket, and CRT failure
Check the dynamic focus voltage at TP-DF
V dynamic focus voltage is approx 90Vp-p
H dynamic focus voltage is approx 300Vp-p
Both H and V are NG
Check +B voltage
Measure the voltage at CN-DF1 on the MAIN PWB (PWE-460).
Normally,the voltage is approx 650~700V.
NG
R950,D950,C950,FBT and their ambient circuit
Q982,Q983,R990 and their ambient circuit failure
Only V is NG ?
Readjust VR952
Check V SAW I wave input at IC501 pin 9
NG
IC501 and there ambient circuit failure
Check V ref U voltage input at IC951 pin 5 is 4.1V
IC952,R966 failure
IC951 failure
Only H is NG ?
Readjust VR951
Check H drive pulse input at IC951 pin 24
NG
FBT,R5R2,ZD5E1,Q5R1,IC951 and there ambient circuit failure
Check H SAW WAVE output at IC951 pin 17
NG
Q951 and IC951 failure
IC951 failure

18. POOR LINEARITY

18-1 HORIZONTAL LINEARITY FAILURE

Check the linearity.

Passed — OK

Failed

Check the horizontal frequency band selector.

Check the voltage of IC801 pins 35, 36, 38, 39 on the MAIN PWB (PWE-460).

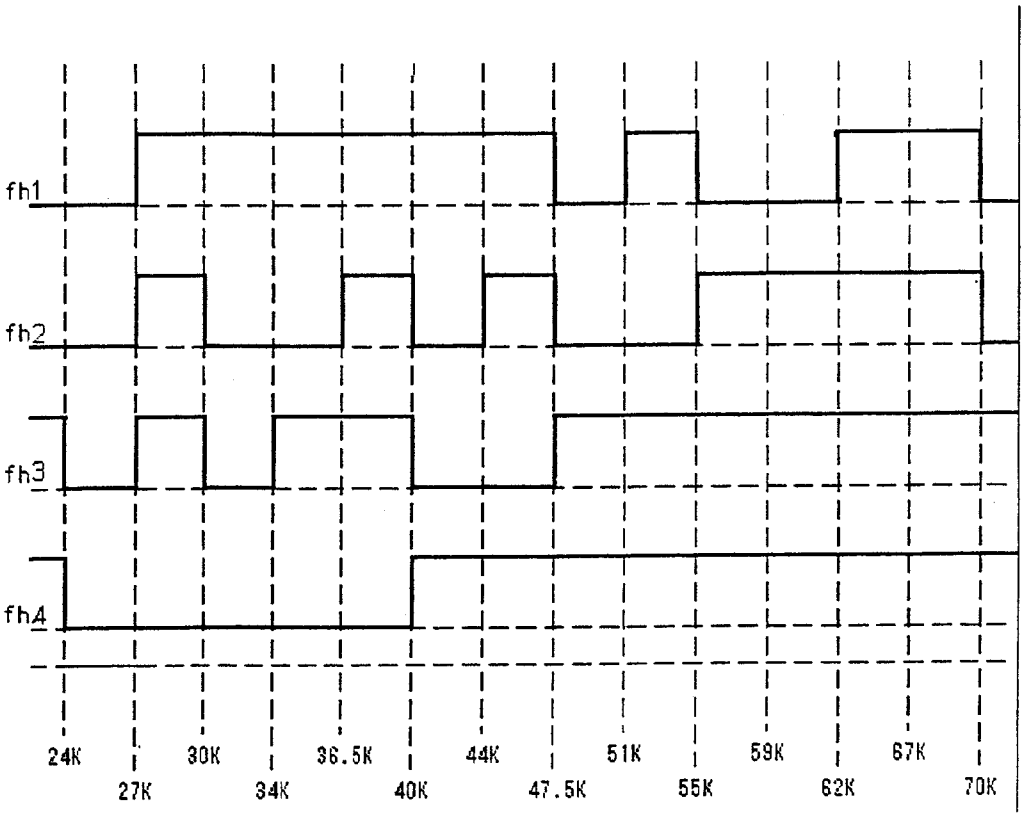
Failed — IC801 on the MAIN PWB (PWE-460) may have failed.

Passed

Check the horizontal frequency band selector.

L571 on the MAIN PWB should be shorted at 1024*768(60) and opened at VGA.

Passed — D57H, D57A, D578, D576, Q57F, Q579, Q574, Q573,may have failed.



18-2 VERTICAL LINEARITY FAILURE

R508, R509 , IC501 or IC532 on the SUB PWB(PWE-461B) may have failed.

19. REGULATOR CIRCUIT FAILURE

19-1 5V REGULATOR CIRCUIT FAILURE

Check the power supply voltage. — Check the voltage of IC803 pin 1 on the MAIN PWB (PWE-460). It should be approx. 8V.

Failed — Check the Switching Regulator circuit. Refer to item 11. Or IC803, C825 or ZD7F1 may have failed.

Passed — IC803, C802 or C824 may have failed.

19-2 12V REGULATOR(VIDEO) CIRCUIT FAILURE

Check the output voltage. — Check the voltage at IC361 pin 2 on the MAIN PWB (PWE-460) should be approx. 12volts.

Passed — CN-MV may have failed.

Failed

Check the input voltage. — Check the voltage at IC361 pin 1 should be approx. 14 V.

Failed — Check the Switching Regulator circuit. Refer to item 11.

Passed

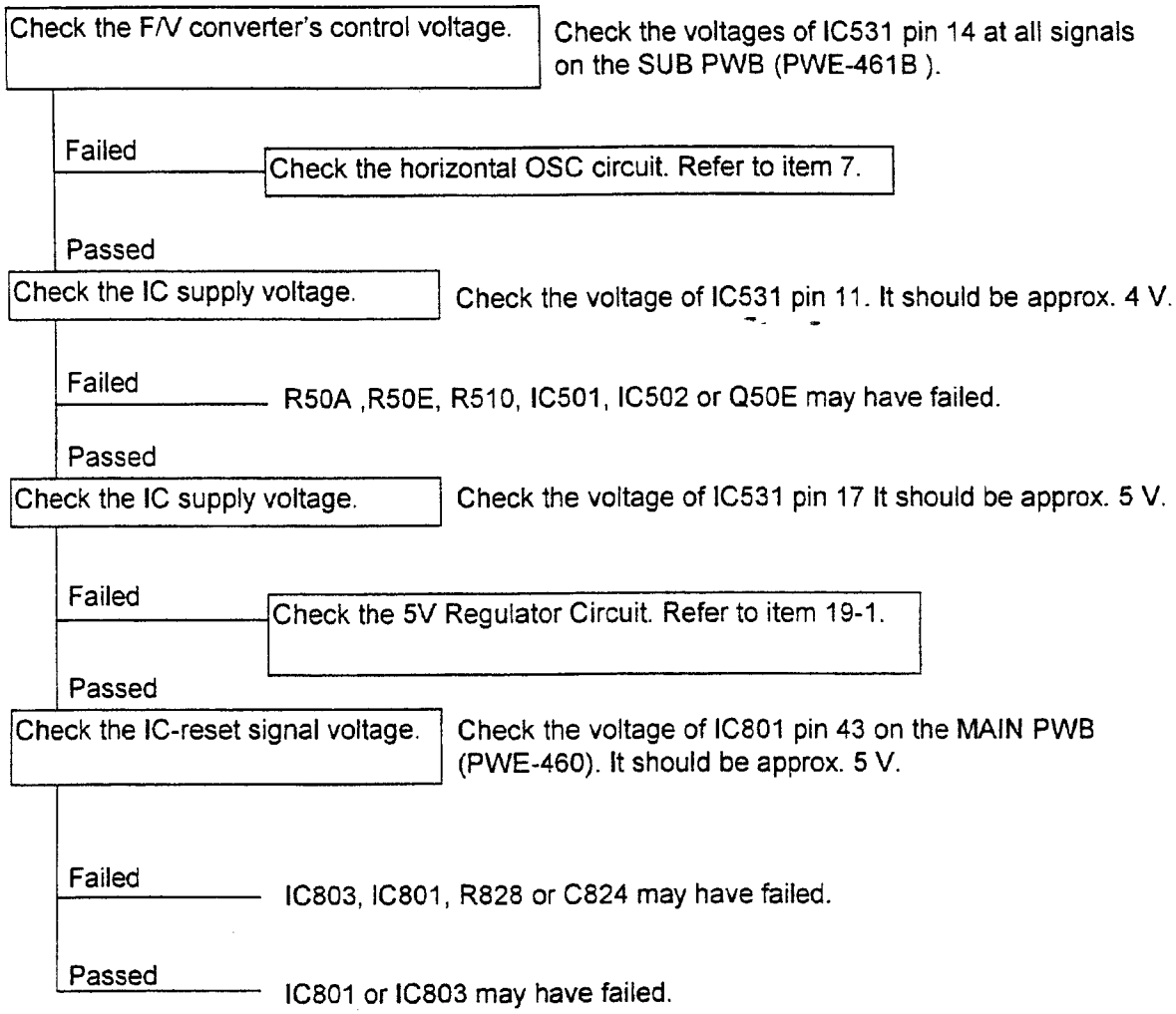
Check the control voltage. — Check the voltage at IC361 pin 4 should be approx. 14 V.

Passed — IC361, C362 or may have failed.

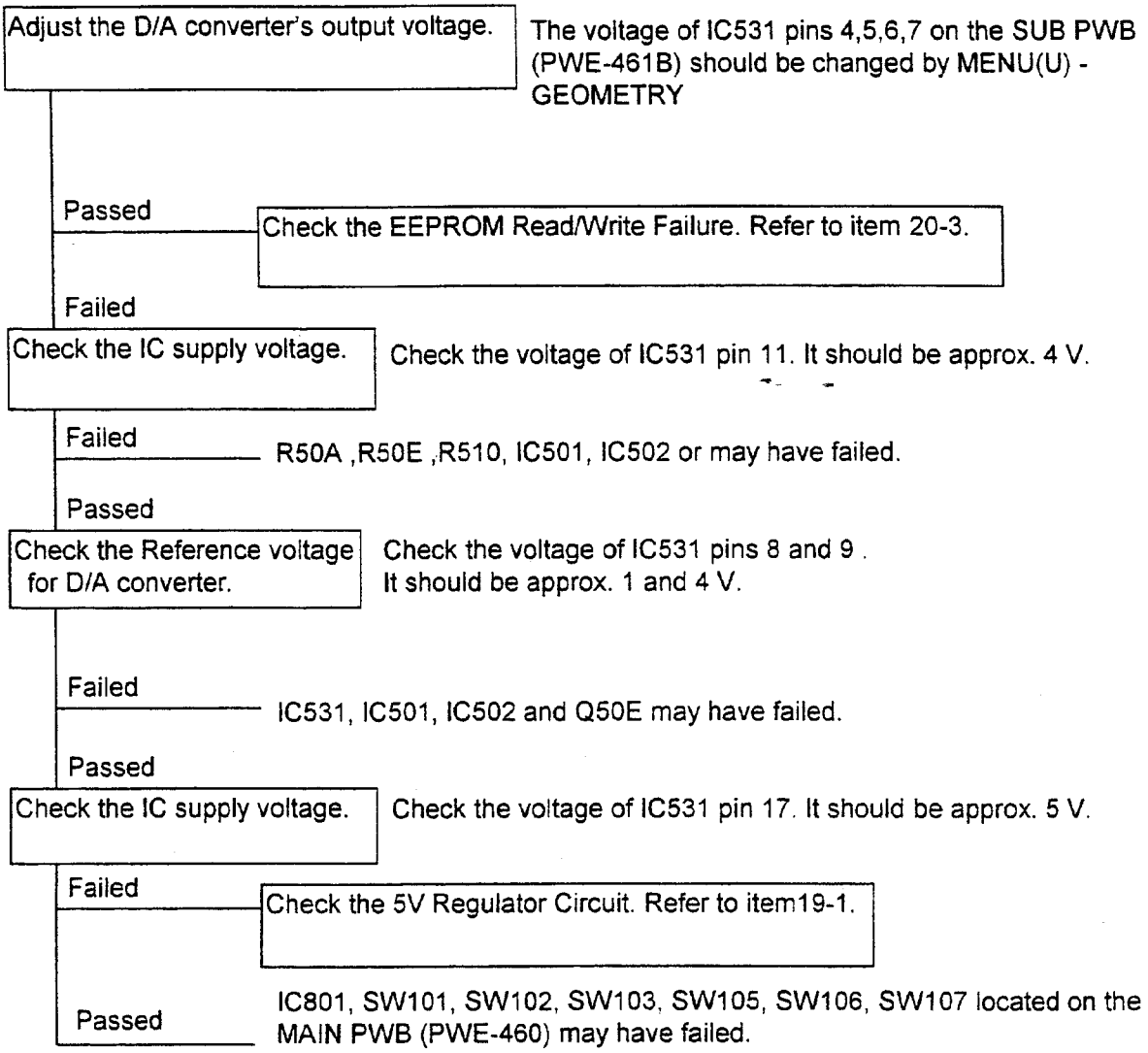
Failed — IC801, Q361 or R361 located on the MAIN PWB (PWE-460) may have failed.

20. DC CONTROL CIRCUIT FAILURE

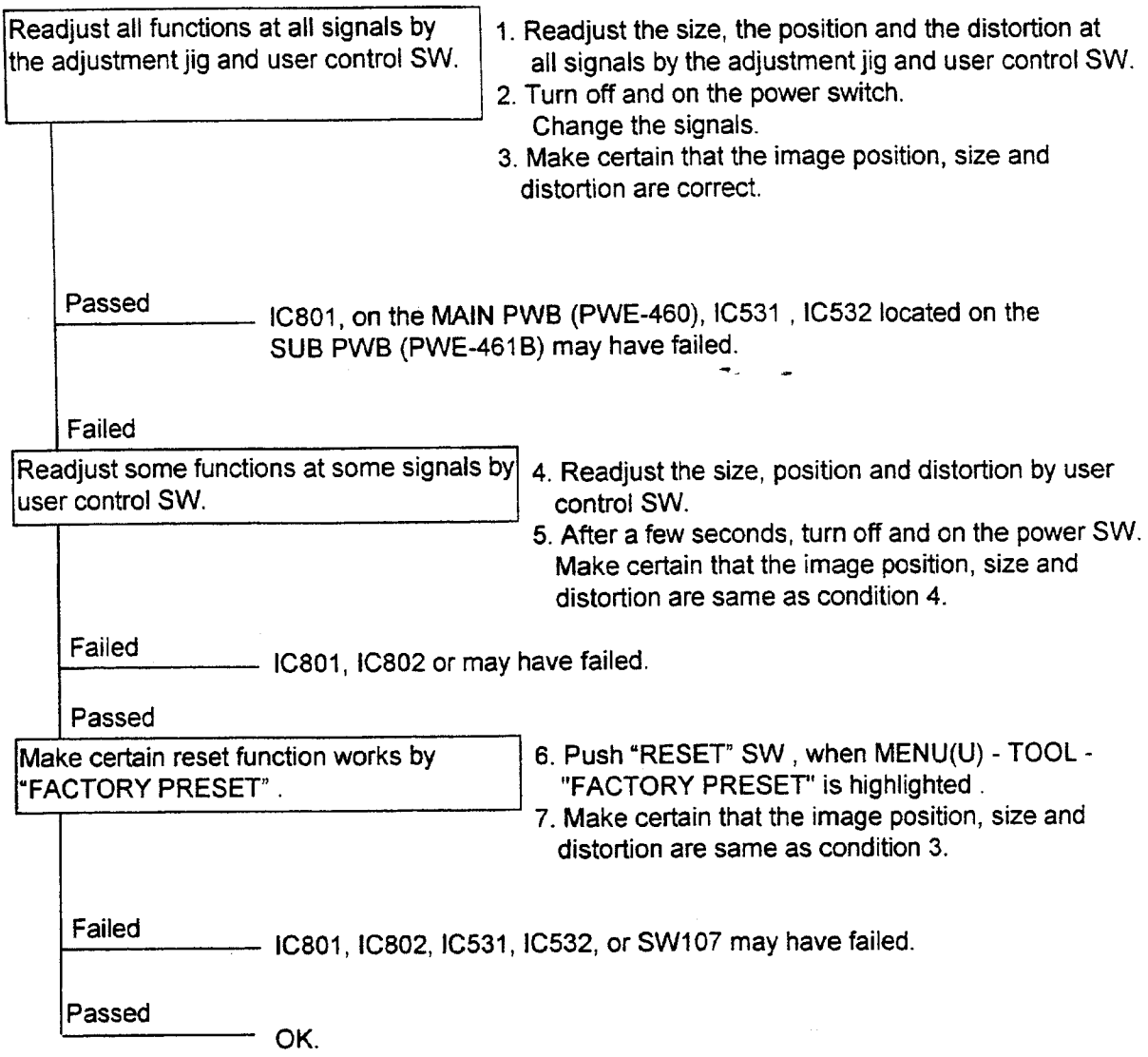
20-1 UNSTABLE HORIZONTAL SYNCHRONIZATION


Check the F/V converter's control voltage.
Check the voltages of IC531 pin 14 at all signals on the SUB PWB (PWE-461B).
Failed
Check the horizontal OSC circuit. Refer to item 7.
Passed
Check the IC supply voltage.
Check the voltage of IC531 pin 11. It should be approx. 4 V.
Failed
R50A ,R50E, R510, IC501, IC502 or Q50E may have failed.
Passed
Check the IC supply voltage.
Check the voltage of IC531 pin 17 It should be approx. 5 V.
Failed
Check the 5V Regulator Circuit. Refer to item 19-1.
Passed
Check the IC-reset signal voltage.
Check the voltage of IC801 pin 43 on the MAIN PWB (PWE-460). It should be approx. 5 V.
Failed
IC803, IC801, R828 or C824 may have failed.
Passed
IC801 or IC803 may have failed.

20-2 DAC OUTPUT VOLTAGE FAILURE

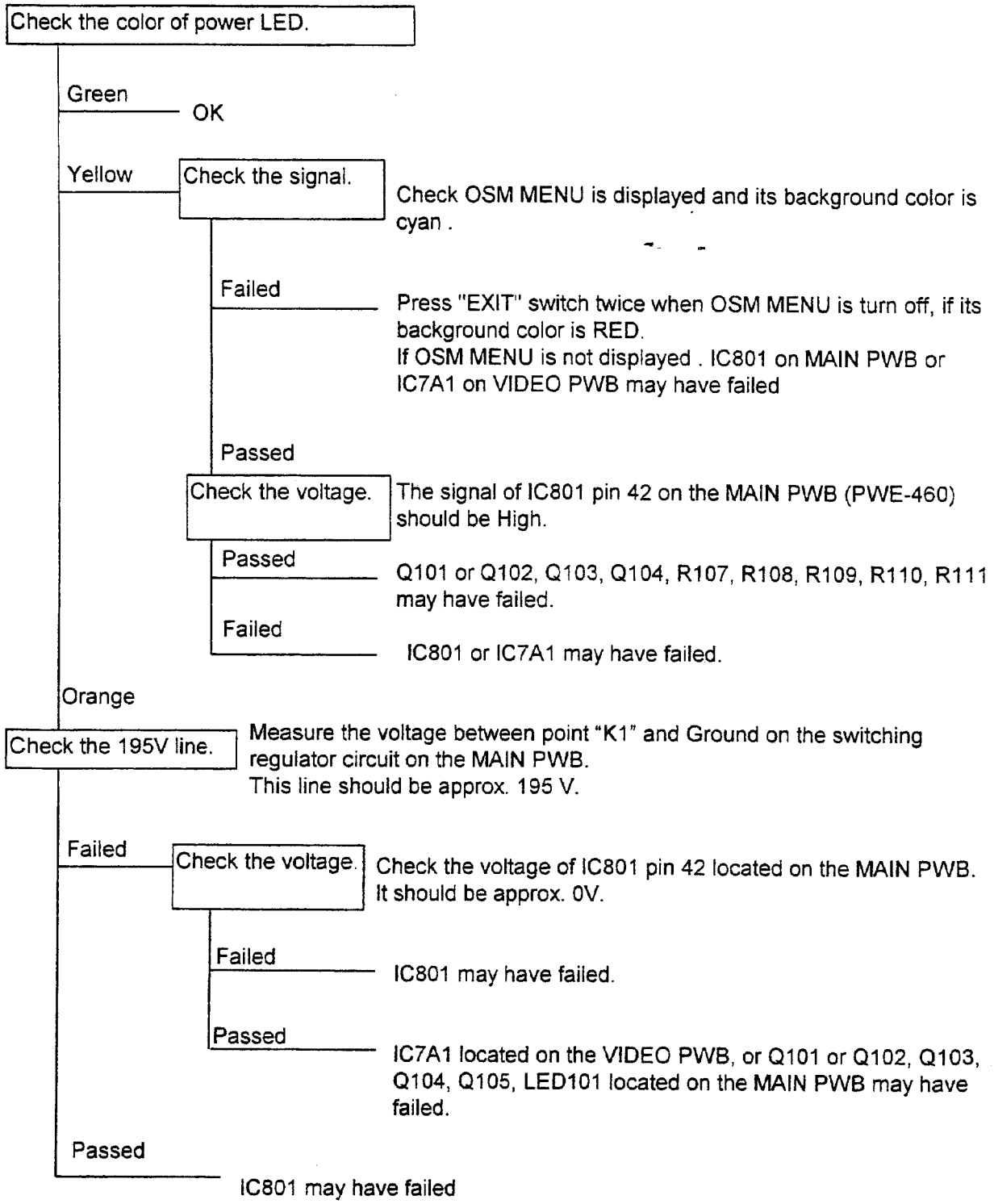

Adjust the D/A converter's output voltage.
The voltage of IC531 pins 4,5,6,7 on the SUB PWB (PWE-461B) should be changed by MENU(U) - GEOMETRY
Passed
Check the EEPROM Read/Write Failure. Refer to item 20-3.
Failed
Check the IC supply voltage.
Check the voltage of IC531 pin 11. It should be approx. 4 V.
Failed
R50A ,R50E ,R510, IC501, IC502 or may have failed.
Passed
Check the Reference voltage for D/A converter.
Check the voltage of IC531 pins 8 and 9 . It should be approx. 1 and 4 V.
Failed
IC531, IC501, IC502 and Q50E may have failed.
Passed
Check the IC supply voltage.
Check the voltage of IC531 pin 17. It should be approx. 5 V.
Failed
Check the 5V Regulator Circuit. Refer to item19-1.
Passed
IC801, SW101, SW102, SW103, SW105, SW106, SW107 located on the MAIN PWB (PWE-460) may have failed.

20-3 EEPROM READ/WRITE FAILURE

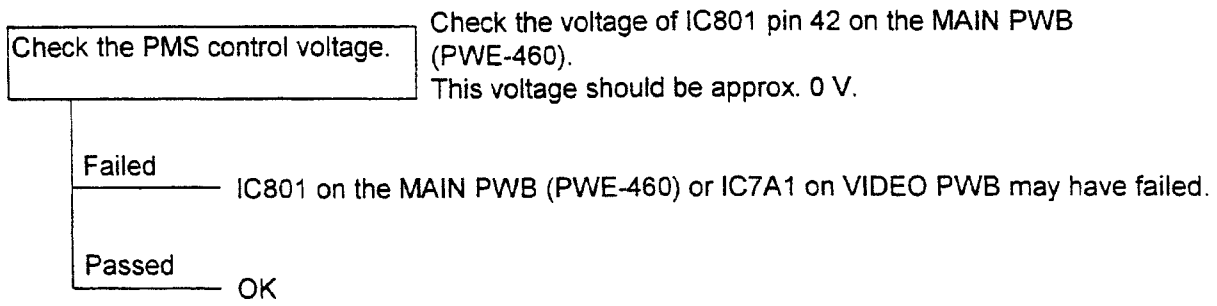

Readjust all functions at all signals by the adjustment jig and user control SW.
1. Readjust the size, the position and the distortion at all signals by the adjustment jig and user control SW.
2. Turn off and on the power switch. Change the signals.
3. Make certain that the image position, size and distortion are correct.
Passed
IC801, on the MAIN PWB (PWE-460), IC531 , IC532 located on the SUB PWB (PWE-461B) may have failed.
Failed
Readjust some functions at some signals by user control SW.
4. Readjust the size, position and distortion by user control SW.
5. After a few seconds, turn off and on the power SW. Make certain that the image position, size and distortion are same as condition 4.
Failed
IC801, IC802 or may have failed.
Passed
Make certain reset function works by "FACTORY PRESET" .
6. Push "RESET" SW , when MENU(U) - TOOL - "FACTORY PRESET" is highlighted .
7. Make certain that the image position, size and distortion are same as condition 3.
Failed
IC801, IC802, IC531, IC532, or SW107 may have failed.
Passed
OK.

21. PMS(Power Management system) INCORRECT OPERATION OR FAILURE

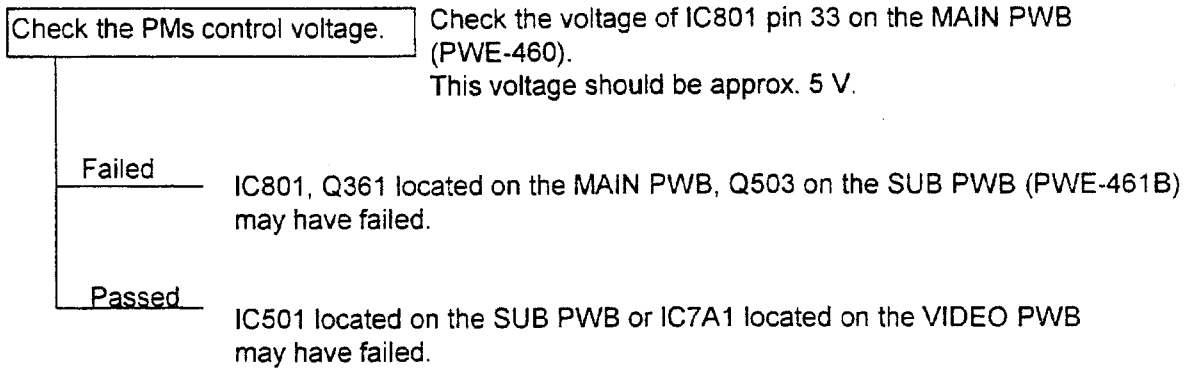
21-1 PMS FAILURE 1 (When a monitor receive Horizontal and Vertical Sync.)


Check the color of power LED.
Green
OK
Yellow
Check the signal.
Check OSM MENU is displayed and its background color is cyan .
Failed
Press "EXIT" switch twice when OSM MENU is turn off, if its background color is RED.
If OSM MENU is not displayed . IC801 on MAIN PWB or IC7A1 on VIDEO PWB may have failed
Passed
Check the voltage.
The signal of IC801 pin 42 on the MAIN PWB (PWE-460) should be High.
Passed
Q101 or Q102, Q103, Q104, R107, R108, R109, R110, R111 may have failed.
Failed
IC801 or IC7A1 may have failed.
Orange
Check the 195V line.
Measure the voltage between point "K1" and Ground on the switching regulator circuit on the MAIN PWB.
This line should be approx. 195 V.
Failed
Check the voltage.
Check the voltage of IC801 pin 42 located on the MAIN PWB.
It should be approx. 0V.
Failed
IC801 may have failed.
Passed
IC7A1 located on the VIDEO PWB, or Q101 or Q102, Q103, Q104, Q105, LED101 located on the MAIN PWB may have failed.
Passed
IC801 may have failed

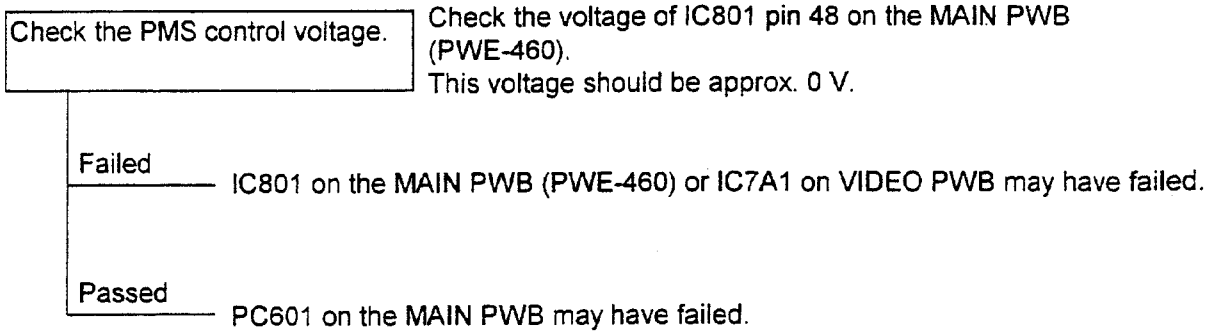
21-2 PMS FAILURE 2 (When a monitor receive no Horizontal Sync)


Check the PMS control voltage.
Check the voltage of IC801 pin 42 on the MAIN PWB (PWE-460).
This voltage should be approx. 0 V.
Failed
IC801 on the MAIN PWB (PWE-460) or IC7A1 on VIDEO PWB may have failed.
Passed
OK

21-3 PMS FAILURE 3 (When a monitor receives no Vertical Sync)

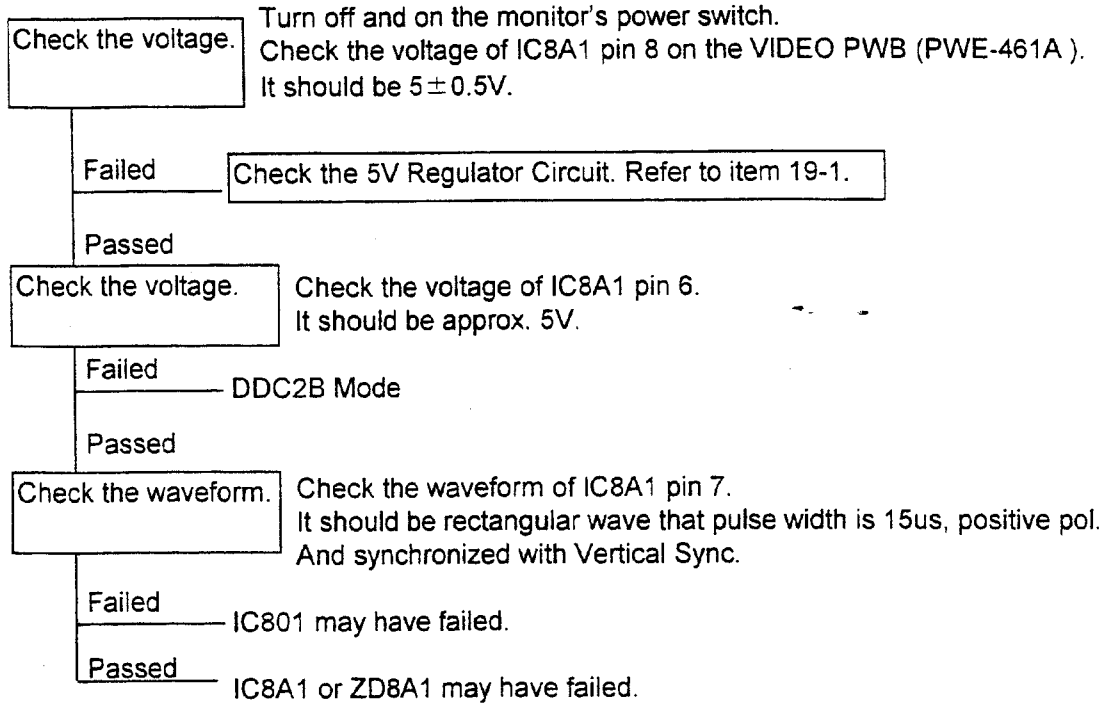

Check the PMs control voltage.
Check the voltage of IC801 pin 33 on the MAIN PWB (PWE-460).
This voltage should be approx. 5 V.
Failed
IC801, Q361 located on the MAIN PWB, Q503 on the SUB PWB (PWE-461B) may have failed.
Passed
IC501 located on the SUB PWB or IC7A1 located on the VIDEO PWB may have failed.

21-4 PMS FAILURE 4 (When a monitor receive neither Horizontal nor Vertical Sync.)

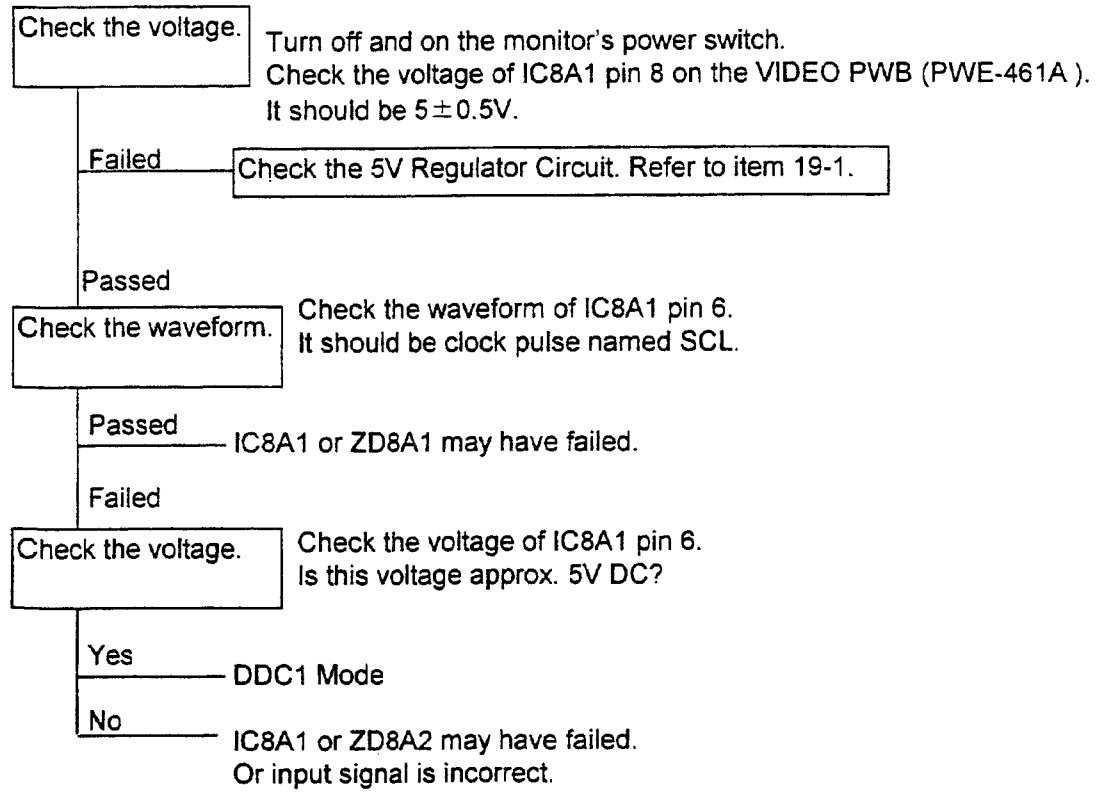

Check the PMS control voltage.
Check the voltage of IC801 pin 48 on the MAIN PWB (PWE-460).
This voltage should be approx. 0 V.
Failed
IC801 on the MAIN PWB (PWE-460) or IC7A1 on VIDEO PWB may have failed.
Passed
PC601 on the MAIN PWB may have failed.

22. PLUG AND PLAY FUNCTION FAILURE

22-1 NO DDC1 DATA OUTPUT


Check the voltage.
Turn off and on the monitor's power switch.
Check the voltage of IC8A1 pin 8 on the VIDEO PWB (PWE-461A).
It should be 5±0.5V.
Failed
Check the 5V Regulator Circuit. Refer to item 19-1.
Passed
Check the voltage.
Check the voltage of IC8A1 pin 6.
It should be approx. 5V.
Failed
DDC2B Mode
Passed
Check the waveform.
Check the waveform of IC8A1 pin 7.
It should be rectangular wave that pulse width is 15us, positive pol.
And synchronized with Vertical Sync.
Failed
IC801 may have failed.
Passed
IC8A1 or ZD8A1 may have failed.

22-2 NO DDC2B DATA OUTPUT


Check the voltage.
Turn off and on the monitor's power switch.
Check the voltage of IC8A1 pin 8 on the VIDEO PWB (PWE-461A).
It should be 5±0.5V.
Failed
Check the 5V Regulator Circuit. Refer to item 19-1.
Passed
Check the waveform.
Check the waveform of IC8A1 pin 6.
It should be clock pulse named SCL.
Passed
IC8A1 or ZD8A1 may have failed.
Failed
Check the voltage.
Check the voltage of IC8A1 pin 6.
Is this voltage approx. 5V DC?
Yes
DDC1 Mode
No
IC8A1 or ZD8A2 may have failed.
Or input signal is incorrect.

23. THE OSM FAILURE

CAUTION : If no picture when the video signal is input, refer to Item 2.

Check the OSM signals output. — Check the wave forms at IC791 pins 12,13,15,17 when push the EXIT, CONTROL or PROCEED SW.

Passed — LC791, LC792R/G/B, IC7E1 or IC711 may have failed.

Failed

Check the H sync. input. — Check the wave forms at IC791 pin 18 on the VIDEO PWB(PWE-461A).

Failed — IC7E1, IC791 or CN-MA may have failed.

Passed

Check the V sync. input. — Check the wave forms at IC791 pin 19 on the VIDEO PWB.

Failed — IC7A1 or IC791 may have failed.

Passed

Check the OSM control line(I^2C). — Check the wave forms at IC791 pins 5 and 6 on the VIDEO PWB.

Passed — IC711 may have failed.

Failed

Check the user control line on the MAIN PWB. — User control key logic table for IC801 pins 18~24 is as below.

Passed — IC801 or CN-MB may have failed.

Failed — SW101,102,103,105,106,107,MRC801,802 or IC801 may have failed.

PIN No.	18	19	20	21	22	23	24
EXIT	H	L	L	L	L	L	L
−	L	H	L	L	L	L	L
△	L	L	H	L	L	L	L
▽	L	L	L	H	L	L	L
+	L	L	L	L	H	L	L
PROCEED	L	L	L	L	L	H	L
RESET	L	L	L	L	L	L	H

"H" = "High" level 4.5~5.0V

"L" = "Low" level approximately 0V

24. ROTATION CORRECTION CIRCUIT FAILURE

Check the ROTATE control voltage.

Check the voltage of IC532 pin 5 on the SUB PWB(PWE-461B). It should change from 1V to 4V, when the ROTATE CONTROL is used. (on OSM MENU)

Failed — IC532 may have failed.

Passed

Check the Z-DY voltage.

Check the voltage of CN-ZD pin 3. It should change from approx. +1.5V to -1.5V, when the ROTATE CONTROL is used.

Failed — IC402, CN-ZD or CRT(ROTATION COIL) may have failed.

25.THE VIDEO BOOST FAILURE

Set the VIDEO BOOST level 1,2 or 3 on OSM MENU.(not all area)

Check the VIDEO BOOST ON signal.

Check the voltage of IC791 pin 14 on the VIDEO PWB (PWE-461A).It should be 0V.

Failed — IC791 on the VIDEO PWB or IC801 on the MAIN PWB may have failed.

Passed

Check the CONTRAST control wave form.

Check the wave form of IC711 pin 13 on the VIDEO PWB. (PWE-461A) It should be rectangular wave form.

IC711 pin 13

Failed — IC7E1, D7E1 or Q7E1 may have failed.

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1. REGULATOR CIRCUIT

1-1 Switching Regulator Circuit

a. Rectifying and Smoothing Circuit

AC input is rectified by D601. Then, it is smoothed by C609.
The resulting DC voltage is supplied to the converter circuit.

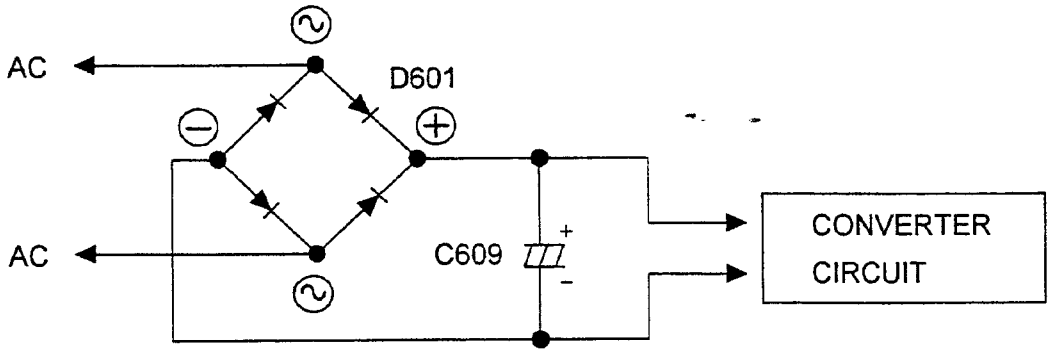


Fig. 1-1 Rectifying and Smoothing Circuit

b. Auxiliary Power Supply Circuit

The auxiliary power supply circuit is needed to activate IC621. When the power switch is turned on, the charging current flows into the capacitor C627 through R603, R604, ZD625 and D625. Oscillation starts when the voltage of IC621 pin 7 reaches 17V by this charging operation.
After the start of oscillation, the fly-back voltage of the auxiliary winding of T601 is rectified and smoothed by D603 and C612.
The resulting DC voltage is supplied to IC621 pin 7.

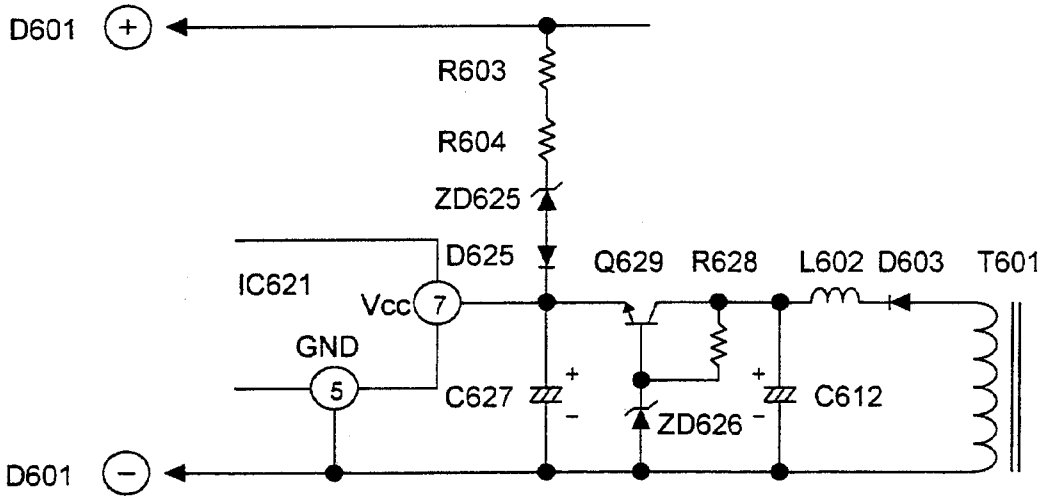


Fig. 1-2 Auxiliary Power Supply Circuit

c. Converter Circuit

The converter circuit consists of the primary winding of T601, a switching device Q601 and surge absorbers (C610, C611, R605, R606 and D602) which are connected to the primary winding of T601.

The oscillating signal from IC621 pin 6 is applied to the gate of Q601 so that the drain-source is turned ON and OFF. As a result, the oscillating voltage is applied to the primary winding of T601.

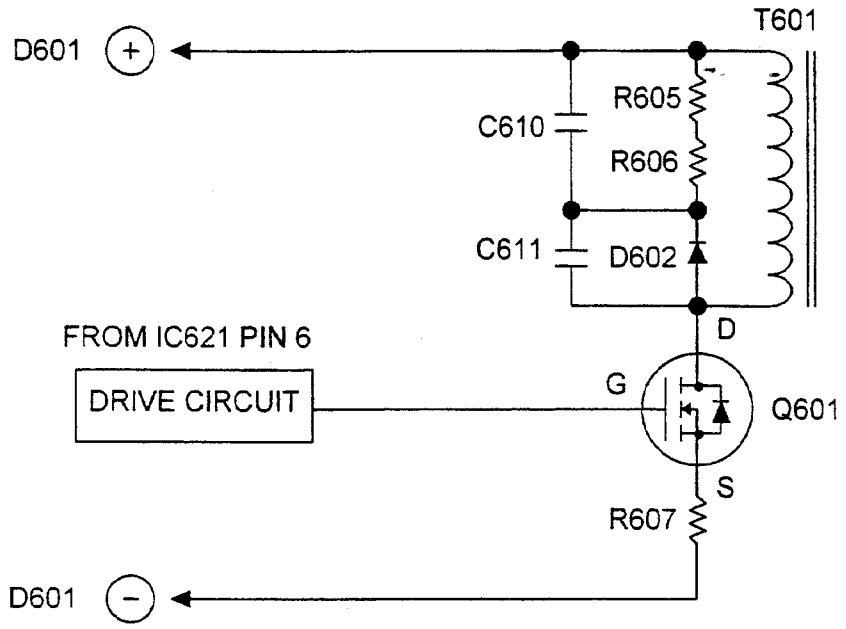


Fig. 1-3 Converter Circuit

d. Output Rectifying and Smoothing Circuit

The fly-back voltages which are generated at the secondary windings of T601 are rectified by D651, D652, D653, D654, D655 and D656. Then, these voltages are smoothed by C653, C654, C657, C658, C660, C661, C662, C663 C664, C665, C666, C667 and C668 so that DC voltages are obtained. The DC voltages are maintained constantly by controlling the ON period duty cycle of Q601 in the converter circuit.

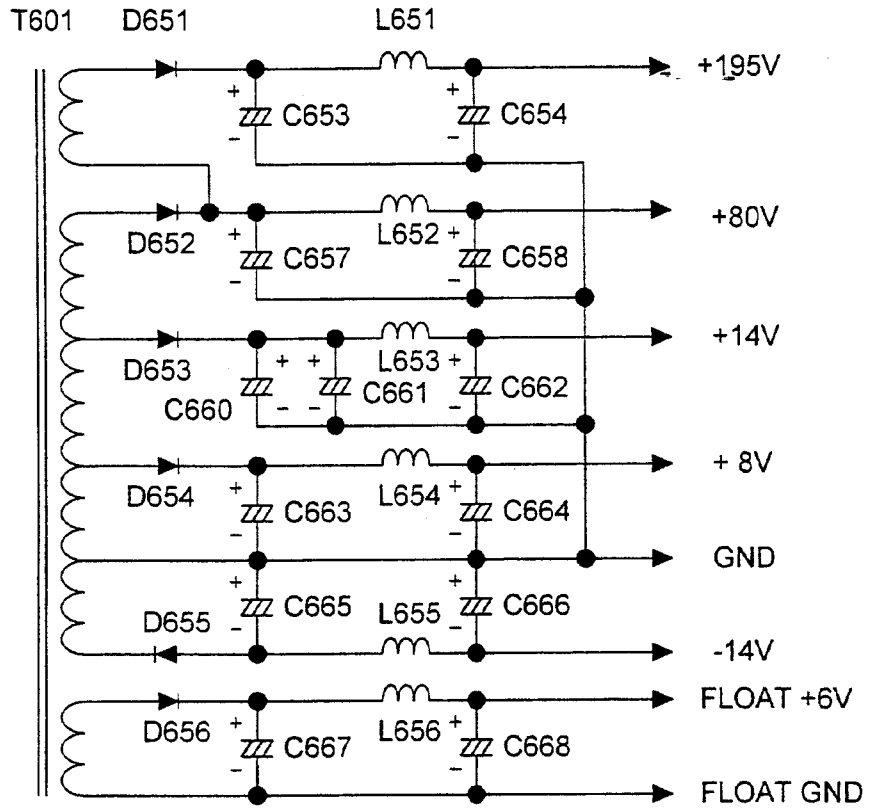


Fig. 1-4 Output Rectifying and smoothing Circuit

e. Error Detection Amplifier Circuit

The output voltage 195V is divided by the network resistors. This divided voltage is compared with the reference voltage at the error amplifier IC671. An error signal is applied to the control circuit via the photocupler PC603.

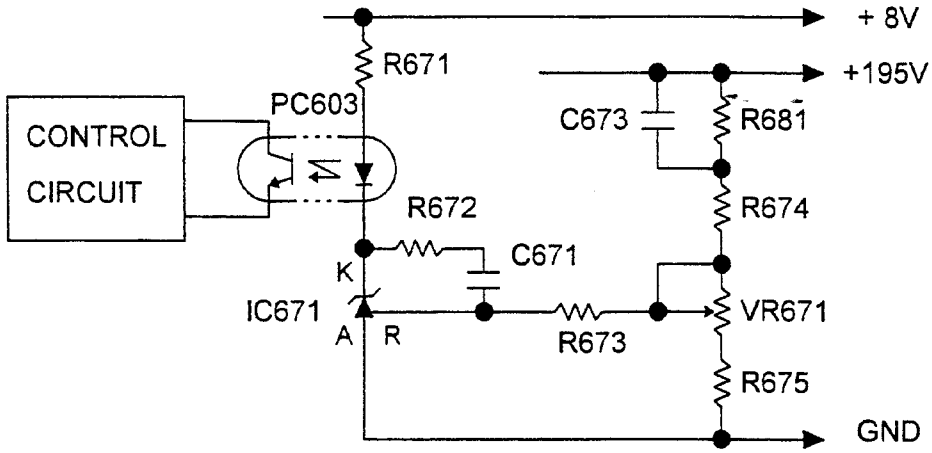


Fig. 1-5 Error Detection Amplifier Circuit

f. Overvoltage Protection

If some failure occurs and the output voltage of the secondary windings of T601 increase, the voltage of the auxiliary winding of T601 also will increase proportionally. When the voltage of C612 increases beyond the zener voltage of ZD628, Q631 and Q633 will turn on. This action will decrease the voltage of IC621 pin 1 and will stop the oscillator within this IC.

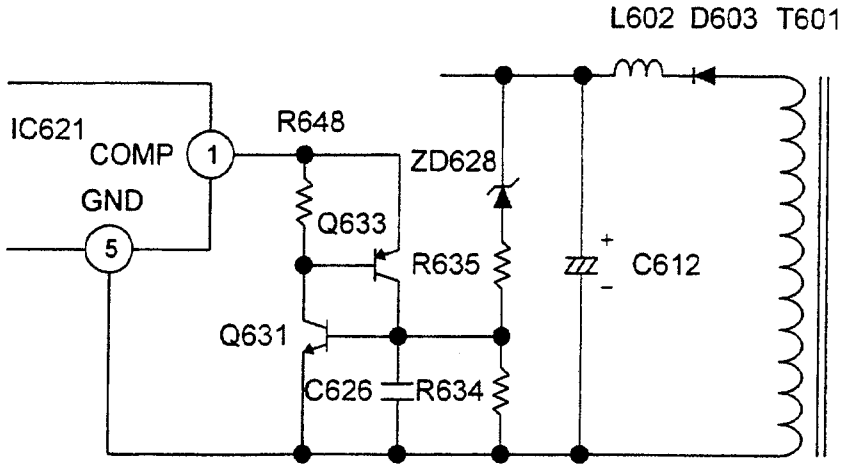


Fig. 1-6 Overvoltage Protection

g. Oscillating and Control Circuit

The oscillating and control circuits are contained in IC621.

IC621 has a built-in oscillator whose frequency is determined by R640 and C630 which are connected to pin 4 and pin 8 respectively. And when the pulse of the horizontal sync signal is applied to R620, the switching frequency is synchronized with the horizontal frequency.

The output of the error detection amplifier circuit is fed back to IC621 pin 2 via PC603 to control the duty cycle of Q601. As a result, the output voltage is kept constant.

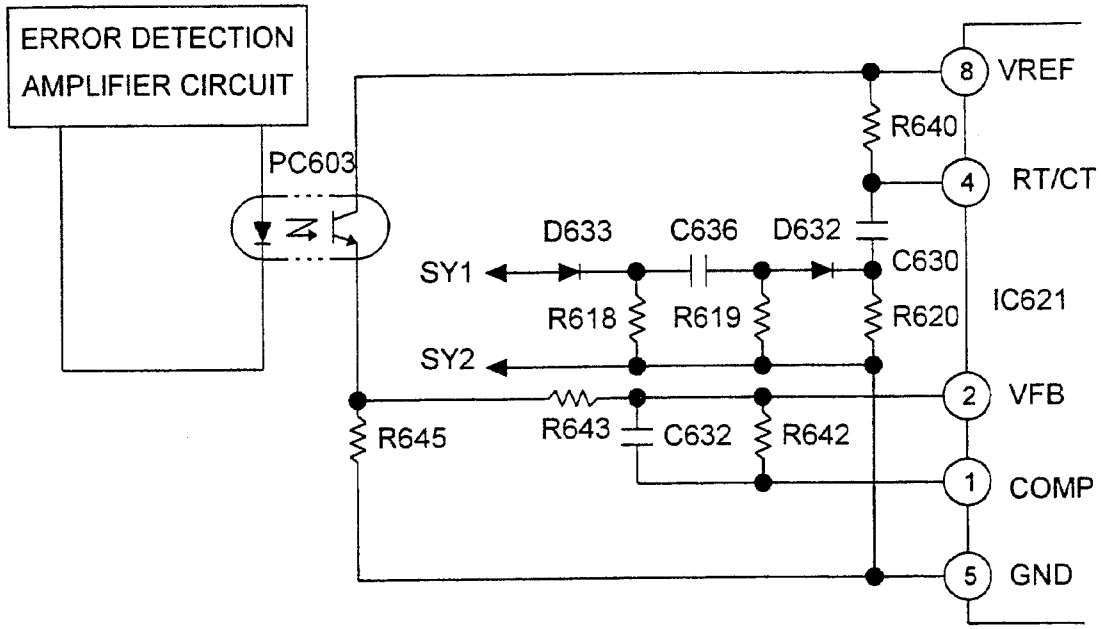


Fig. 1-7 Oscillating and Control Circuit

h. Degaussing Circuit

When the power switch is turned on, or when user accesses the OSM degauss control, current flows into the base of Q671 through R677 and turn on Q671, Q672, and RL601 for two seconds.

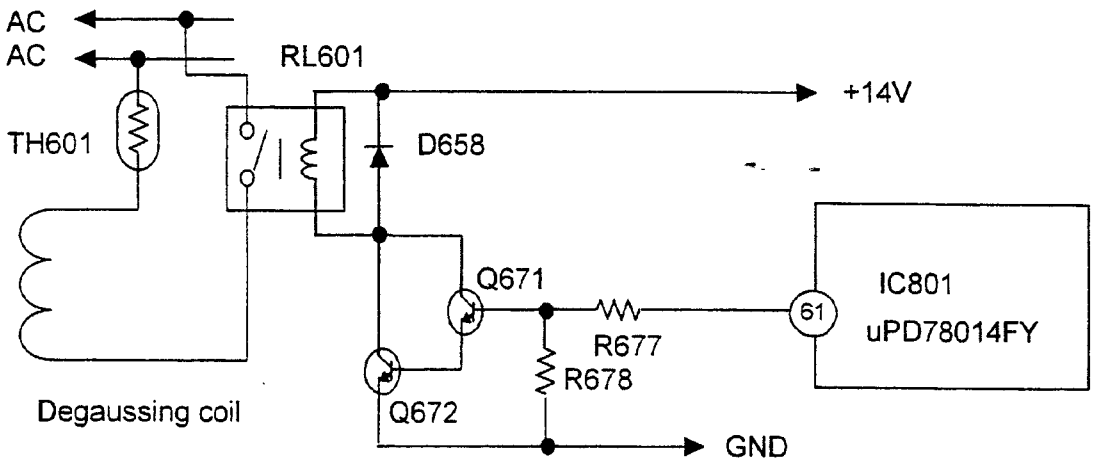


Fig. 1-8 Degaussing Circuit

1-2 +12V Regulator Circuit

This circuit consists of IC361 and Q361. IC361 regulates 12 volts from the supplied 14 volts. IC361 turns off when it receives the IPM suspend mode signal from IC801.

1-3 +6V Regulator Circuit

This voltage supplies the CRT heater voltage. 8Vdc is supplied by the switching regulator to the base of Q7F1, this 8Vdc is rectified to 6.8Vdc by ZD7F1. therefore, a constant 6Vdc is supplied at the emitter of Q7F1.

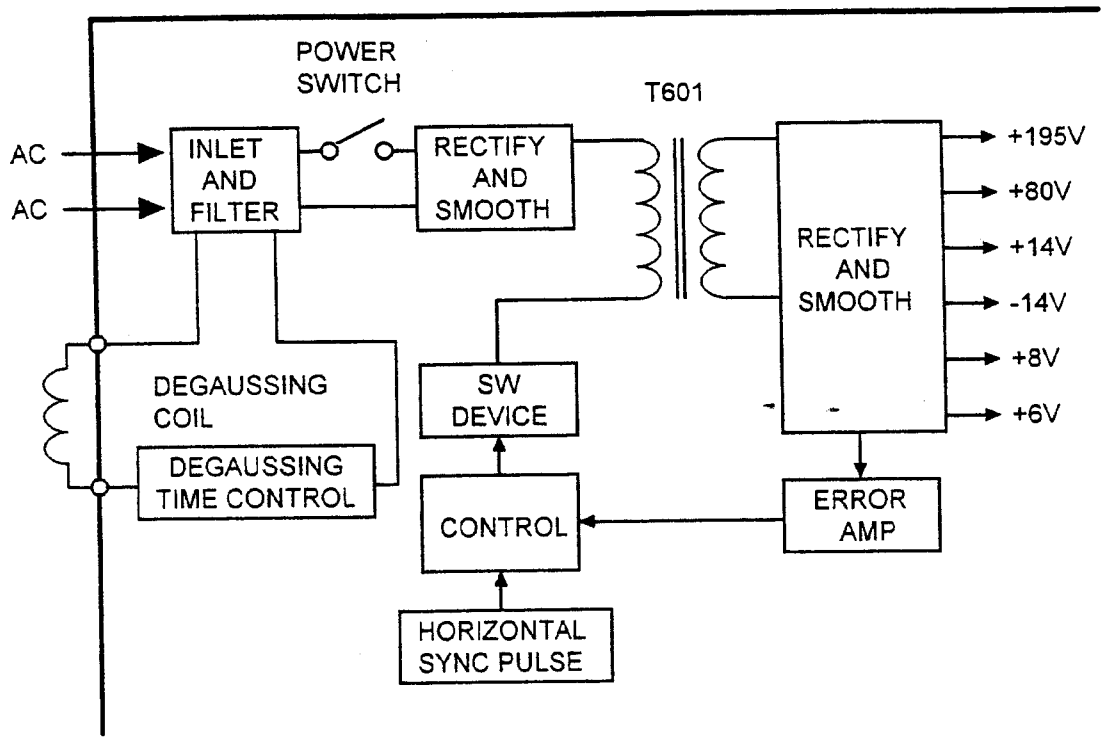


Fig. 1-9 Voltage Regulator Block Diagram

2. SIGNAL INPUT / OUTPUT

2-1 Sync Separater

When a separate sync signal (positive or negative 1~5V_{P-P}), and composite sync signal (positive or negative 1~5V_{P-P}), and sync on green signal (negative) are input, IC7A1 on VIDEO PWB automatically selects a suitable one, and shapes its waveform.

Input : Pin 4 Sync on green (Negative)
Pin 6 Horizontal Sync (Positive/Negative) or Composite Sync (Positive/Negative)
Pin 8 Vertical Sync (Positive/Negative)

Output : Pin 13 Positive Pulse (synchronized with Vertical sync)
Pin 14 Positive Pulse (synchronized with Horizontal sync)
Pin 15 Negative Pulse (synchronized with Horizontal sync)
Pin 17 Negative Clamp Pulse

Table 2-1 Decoder logic output

Input Pin		Output Pin			
Pin6 COMP/H	Pin8 V	Pin1 H STATE	Pin2 V STATE	Pin18 H POL	Pin19 V POL
POSI	NO	H	L	L	L
	POSI	H	H	L	L
	NEG	H	H	L	H
NEG	NO	H	L	H	L
	POSI	H	H	H	L
	NEG	H	H	H	H
NO	NO	L	L	L	L
	POSI	L	H	L	L
	NEG	L	H	L	H

2-2 Sound Input

Audio input signal are controlled volume, balance, bass, treble and surround effect by IC301. The signals at IC301 pins 13 and 14 are amplified by IC302.

2-3 Microphone Output

Input signal is passed directly through to JK342.

2-4 Headphone Output

When headphone cable is connected to JK341, built-in speaker output stops and headphone output turns on.

3. DIGITAL CONTROL

3-1 MPU

IC801 : 8 bit MPU / CMOS IC

IC802 : EEPROM / CMOS IC

This system has the following functions.

Frequency Counter

fh Band

Sound Control

Degaussing control

DAC Control (see 3-2 DC Control Circuit)

PMS control (see 3-3 Power Management system (PMS) Circuit)

OSD control (see 3-5 User Control Operation)

Video Booster (see 4-6 VIDEO BOOST CIRCUIT)

a. Frequency Counter

IC801 counts Horizontal frequency by event counter, Vertical frequency by interval timer . Both Horizontal sync and Vertical sync are positive input to IC801 pins 12 and 44.

Sync range

Horizontal	30.8 kHz ~ 69.2 kHz
Vertical	55.0 Hz ~ 120 Hz

If Horizontal frequency or Vertical frequency become less than 10 Hz , IC801 judges "NO PULSES". And IC801 enters to "PMS MODE".

b. fh Band

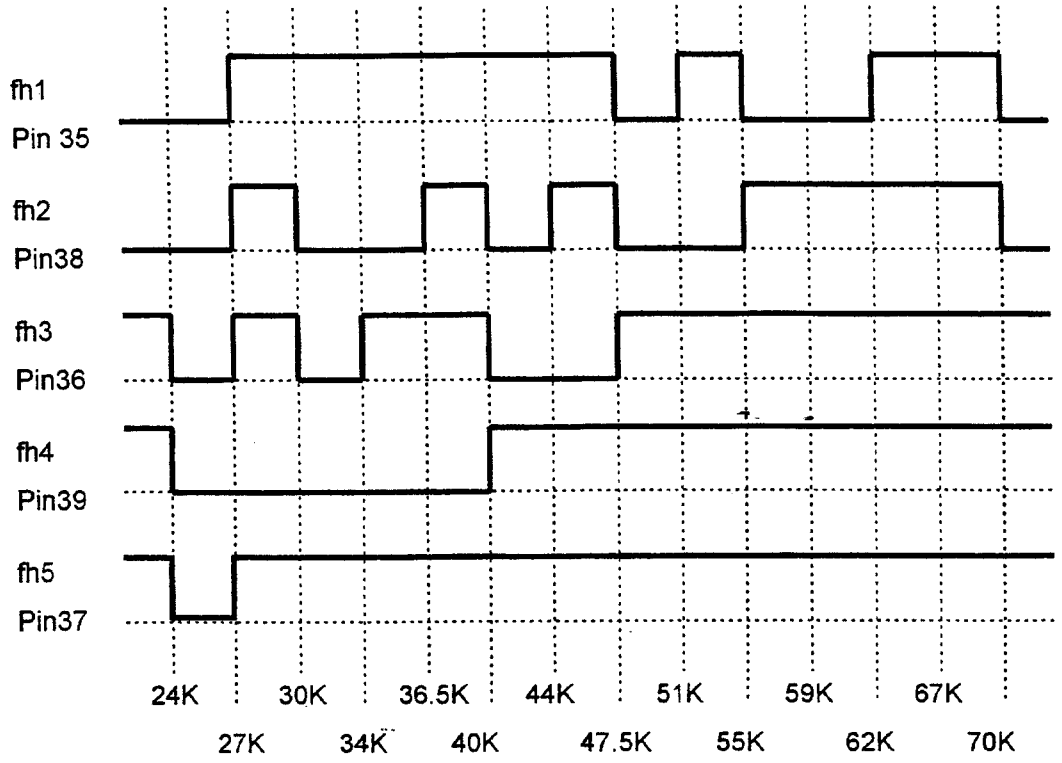


Fig. 3-1 output fh BAND status (IC801)

Attention : To keep the horizontal linearity constant, a fh BAND signal is output for horizontal output circuit control.

c. Sound Control

Sound IC (IC301) is controlled by CPU through I^2C BUS .

Slave address

Sound IC has two slave addresses. It's selected by ADS (Pin 22) condition .

It's connected to GND .

Table 3-1 IC301 Slave address

ADS condition	Slave address						
	D6	D5	D4	D3	D2	D1	D0
5V	1	0	0	0	1	1	0
GND	1	0	0	0	1	0	0

Items to control

VOLUME

TONE (BASS and TREBLE)

BALANCE

SURROUND

MUTE

Initial setting

Sound IC must be set as follows, when power is on

Table 3-2 IC301 Initial setting

bit / Sub address	D7	D6	D5	D4	D3	D2	D1	D0
00H Configuration	1	0	0	0	0	0	0	0
01H Volume control	0	1	1	1	1	1	1	1
02H balance control	0	1	1	0	0	0	0	0
03H Bass control	0	1	1	0	0	0	0	0
04H Treble control	0	1	1	0	0	0	0	0
05H no use	0	1	1	1	1	1	1	1
06H no use	0	1	1	1	1	1	1	1
07H no use	0	1	1	1	1	1	1	1
08H Surround control	0	1	0	0	1	0	0	0

It must be set to "0" bit D7 (sub address 01H to 07H)

d. Degaussing Control

Manual degaussing signal . IC801 pin 61 becomes High level for 5 seconds when user presses the "PROCEED" switch while "DEGAUSS" (MENU(u) - "BRIGHTNESS & CONTRAST ") is highlighted , or power on . DAC - "TILT" data value is set to center, while degauss is activated . This pin will be Low in normal condition .

3-2 DC Control Circuit

CPU(IC801) controls four DAC ICs (IC531, IC532, IC731, IC751) through I^2C BUS . Its analog outputs control DAC outputs so that the analog voltage corresponds to the DC control data from CPU. IC802 is an EEPROM which stores the DC control data for preset graphics standard timings.

Table 3-3 Summary about DAC control (IC731 on VIDEO PWB: CS0=CS1=CS2=0)

PORT	NAME	Summary
A01	OSD ADJ	OSD brightness adjustment .
A02	R GAIN	Video R Color temperature adjustment
A03	G MAX	Video G output swing max adjustment
A04	G GAIN	Video G Color temperature adjustment
A05	CONT ADJ	Video output swing adjustment .
A06	CONT MAX	Video Max output swing adjustment .
A07	B MAX	Video B output swing max adjustment
A08	B GAIN	Video B Color temperature adjustment

Table 3-4 Summary about DAC control (IC751 on VIDEO PWB : CS0=1、CS1=CS2=0)

PORT	NAME	Summary
A01	R BIAS	Raster color(R) cutoff adjustment .
A02	R BRT	Raster color(R) brightness adjustment
A03	G BIAS	Raster color(G) cutoff adjustment .
A04	G BRT	Raster color(G) brightness adjustment
A05	-	NOT IN USE
A06	SUB BIAS	Raster color cutoff reference adjustment .
A07	B BIAS	Raster color(B) cutoff adjustment .
A08	B BRT	Raster color(B) brightness adjustment

Table 3-5 Summary about DAC control (IC531 on SUB PWB : CS0=0,CS1=1,CS2=0)

PORT	NAME	Summary
A01	CORNER	Corner distortion adjustment .
A02	H.POSI	Horizontal position adjustment .
A03	H F/V	Horizontal frequency against voltage adjustment .
A04	H.HOLD	Horizontal free-run frequency adjustment .
A05	SDPB	Side Pin Balance adjustment .
A06	PAR	Parallelogram adjustment .
A07	SDP	Side Pin distortion adjustment .
A08	TRP	Trapezoid adjustment.

Table 3-6 Summary about DAC control (IC532 on SUB PWB : CS0=CS1=1、CS2=0)

PORT	NAME	Summary
A01	VLC	Vertical linearity balance adjustment .
A02	VLS	Vertical linearity balance adjustment .
A03	V.POSI	Vertical position adjustment .
A04	V.SIZE	Vertical size adjustment .
A05	H.DF	SUB.H.D.FOCUS adjustment
A06	TILT	Display tilt (raster rotation) adjustment .
A07	HSMAX	Horizontal maximum size adjustment .
A08	H.SIZE	Horizontal size adjustment .

3-3 Power Management System (PMS) Circuits

These circuits reduce power consumption. They have 3 modes that are stand-by, suspend and off.

Table 3-7 PMS Mode (IC801)

Mode	Pin 33 PMS_SUS	Pin 34 PMS_OFF	Pin 42 POWER LED
On	Low	Low	Low
Stand by	Low	Low	Low
Suspend	High	Low	pulse (1kHz)
Off	Low	High→Open	High

a. Stand-by Mode

When the horizontal sync is not input ,this monitor enters stand-by mode in a few seconds. IC801 controls IC791 (OSD IC). V ideo signals of IC711 pin 18,20,23 are stopped by blanking pulse IC791 pin 12. When the horizontal sync is input, this monitor returns to normal operation mode with the shortest recovery time.

b. Suspend Mode

When the vertical sync is not input, this monitor enters suspend mode in a few seconds. IC801 outputs pulse (1kHz) from pin 42. IC801 Pin 33 outputs "High". Since Q102 and Q103 toggle on-off alternately, LED101 turns yellow. As Q361 turns on, IC361 soes to suspend mode, so 12v line turns off. As Q503 turns on , IC501 have no sawtooth waves. Then the vertical deflection operation stops.
When the vertical sync is input to this monitor, it becomes normal operation mode with longer recovery time than stand - by Mode.

c. Off Mode

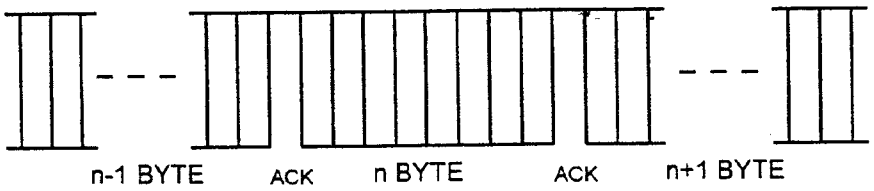
When the horizontal sync and vertical syncs are not input, this monitor enters off mode in a few seconds. IC801 pin 34 becomes high, then PC601 turns on, therefore switching regulator circuit is stopped. (Then IC801 pin 34 becomes Low.)
When the horizontal sync is input, Q871 turns on and as PC602 turns on, switching regulator circuit restarts.

3-4 Plug and Play (PnP) Circuit

VESA Display Data Channel (DDC)

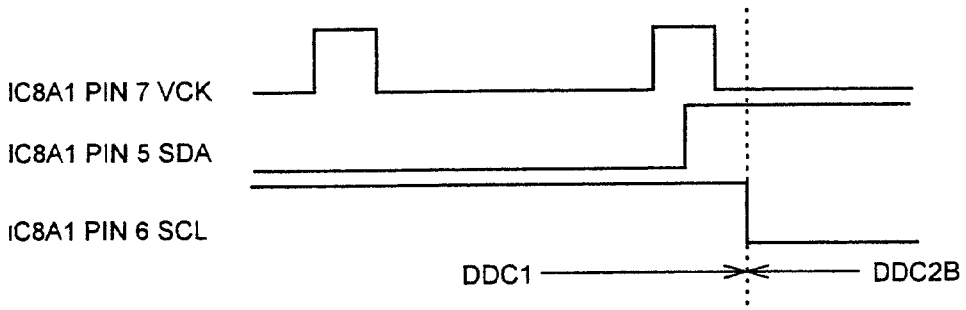
a. DDC1

Input VCLK (V CLOCK) to IC8A1 pin 7. Serial data(SDA) output from pin 5 to synchronize VCLK rising. The contents of SDA is called EDID data and the information of monitor's specifications and signal's supports are stored. They are composed of 8 bit, 128 byte. The data of SDA are composed of 9 bit. The highest rank bit is ignored (acknowledge). The pin 6 is always high. In DDC1, their data is outputted continuously.



b. DDC2B

When SCL (SERIAL CLOCK) is input to IC8A1 pin 6 changes from high to low, changing to DDC2B mode. SDA output the same EDID data at DDC1. But output protocol is different. In DDC2B, no VCLK< base to sync output I^2C protocol at SCL.



3-5 User Control Operation

User Control Interface (IC801)

Table 3-8 Input (IC801)

Pushed SW	Pin 18	Pin 19	Pin 20	Pin 21	Pin 22	Pin 23	Pin 24
EXIT	High	Low	Low	Low	Low	Low	Low
-	Low	High	Low	Low	Low	Low	Low
▼	Low	Low	High	Low	Low	Low	Low
▲	Low	Low	Low	High	Low	Low	Low
+	Low	Low	Low	Low	High	Low	Low
PROCEED	Low	Low	Low	Low	Low	High	Low
RESET	Low	Low	Low	Low	Low	Low	High

OSD

This model is adjusted through OSD (On Screen Display ;it is called OSM™ in USA) , by operating Control Panel. It is located on the lower left corner of front panel.

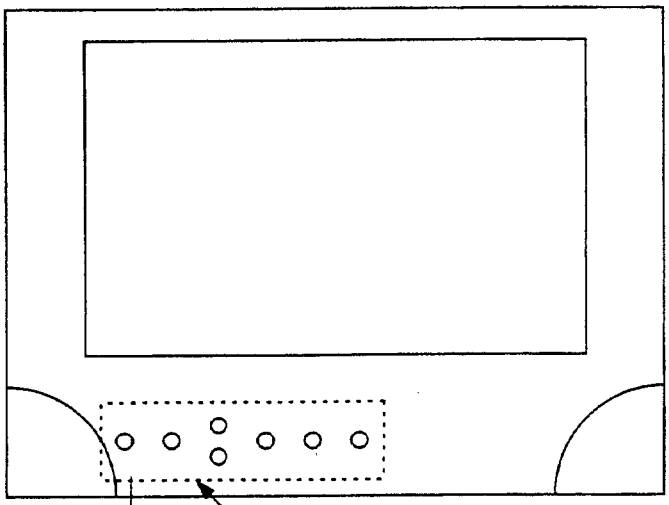


Fig. 3-2 Front View

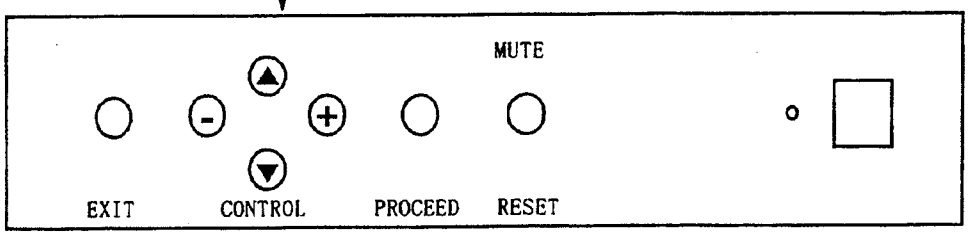


Fig. 3-3 Control Panel

OSM MENU structure is as below. (It is structured "TAB" , "ITEM" , "SUB MENU")

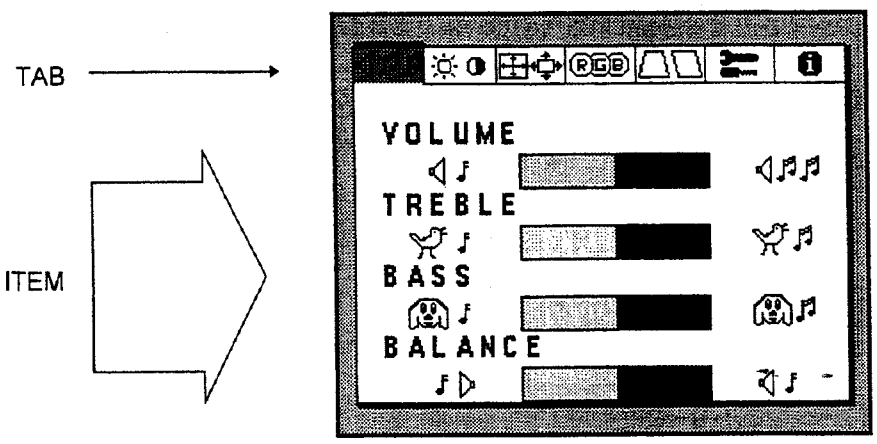


Fig. 3-4 "TAB" , "ITEM"

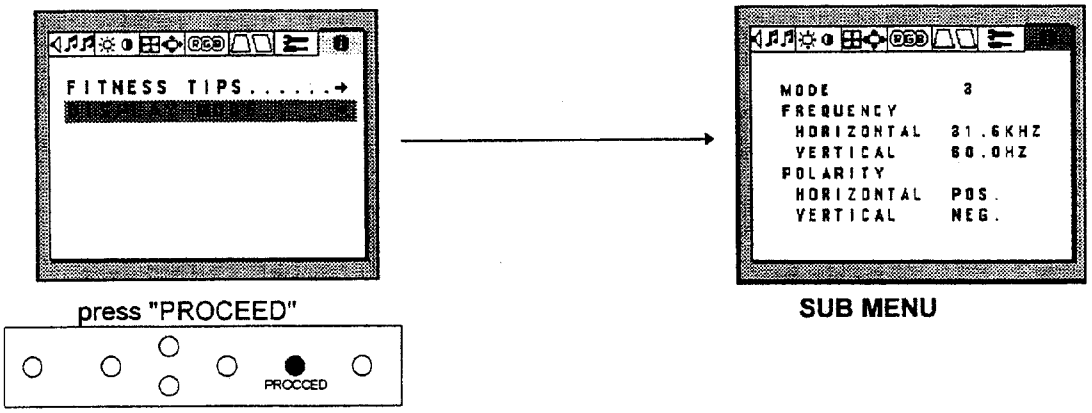


Fig. 3-5 SUB MENU

Table 3-9 USER CONTROL SWITCH FUNCTION

MENU ⟶ / KEY		"EXIT"	"—"	"+"	"▲"	"▼"	"PROCEED"
TAB	TAB		O	O			
TAB	ITEM					O	
ITEM	SUBMENU						O
ITEM	ITEM				O	O	
SUBMENU	ITEM	O					
ITEM	TAB	O			O *	O **	
ALL ITEM	TAB	O					

* : Valid only if highlighted bar is on top ITEM

** : Valid only if highlighted bar is on bottom ITEM

Control OSM MENU

This model is adjusted through On Screen Display , by operating the front panel switch . On Screen Display menu is divided into the following 2 types.

1) MENU (USER) : Menu containing items that can be operated by user.

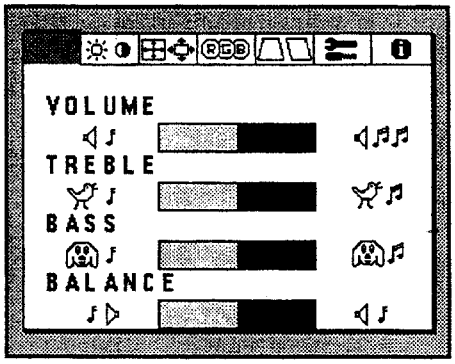


Fig. 3-6 USER MENU

2)MENU (SERVICE) : Menu that is hidden from user.

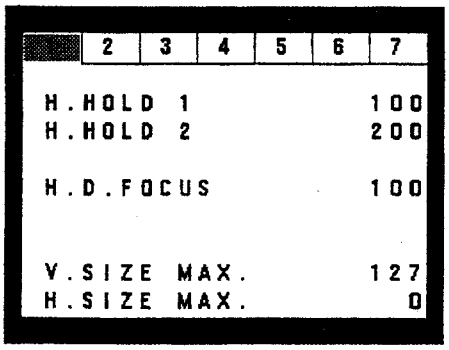
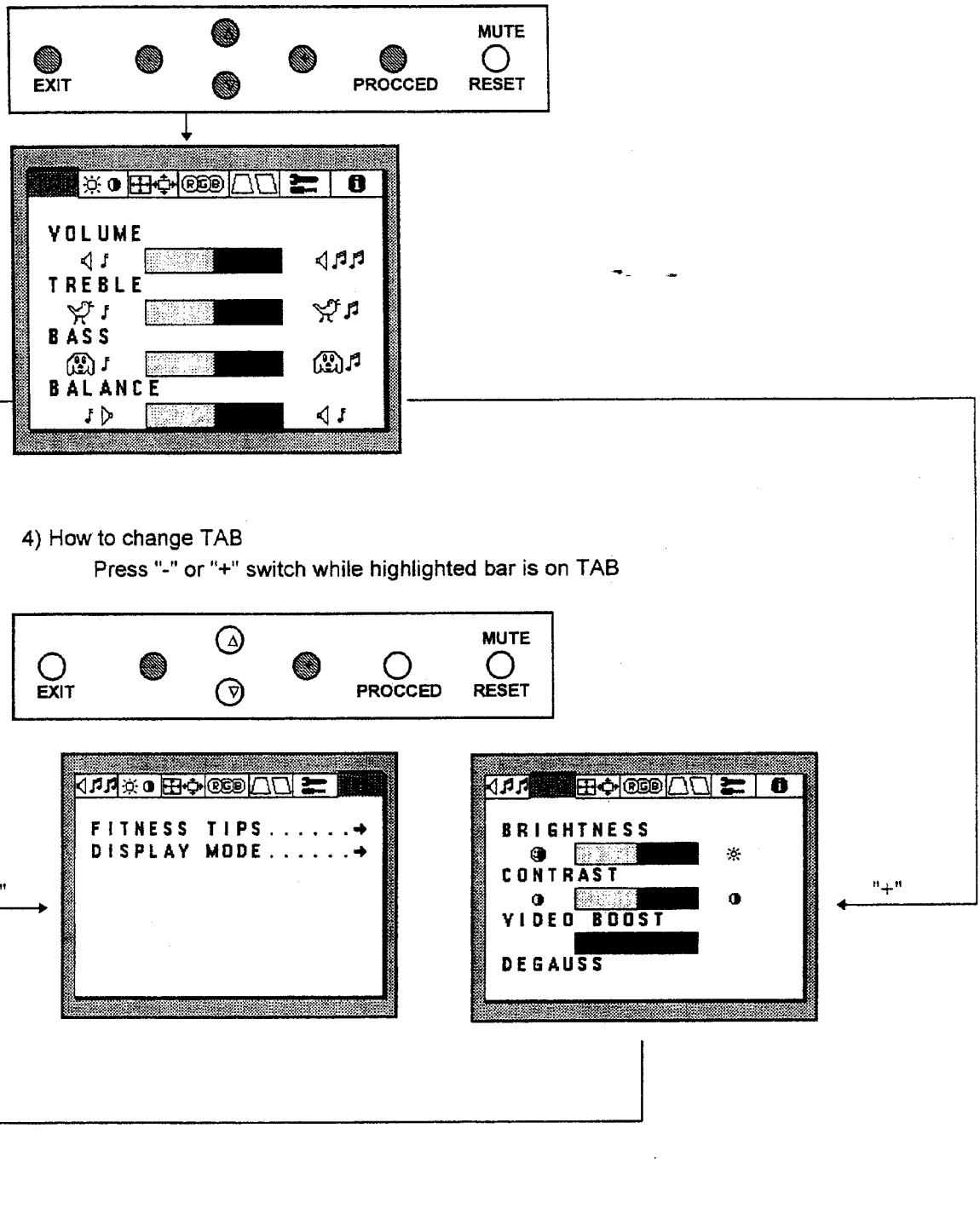


Fig. 3-7 SERVICE MENU

Hereafter , they will be called **MENU(u)**, and **MENU(s)** .
The menu can be displayed when a signal is input to the Monitor.

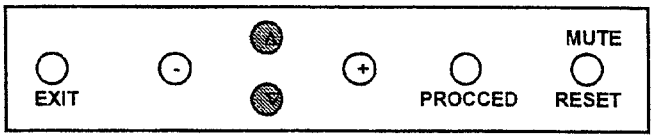
3) How to display OSM MENU

MENU(u) : Press "EXIT" or "—", "+", "▲", "▼", "PROCEED" once when OSM MENU is not displayed .

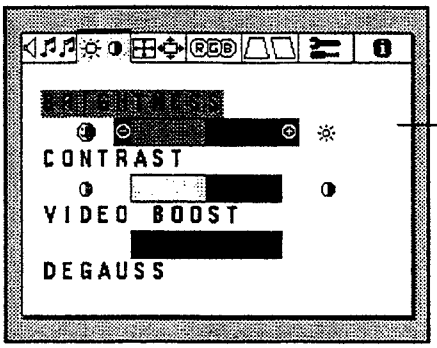


5)Select ITEM

Press "▲" or "▼" switch

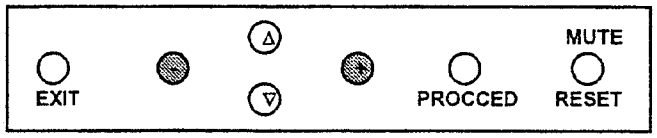


"▼"

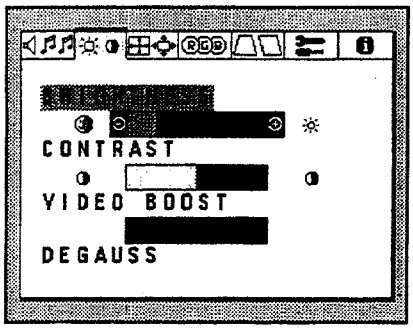


6)Changes data value

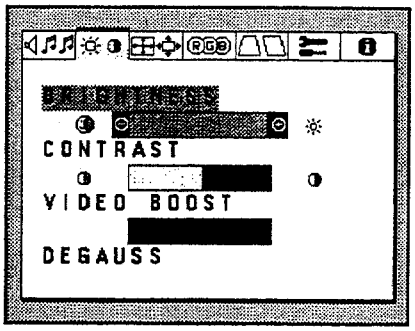
Press "-" or "+" switch while highlighted BAR is on TAB



"-"

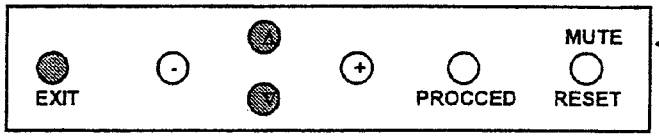


"+"



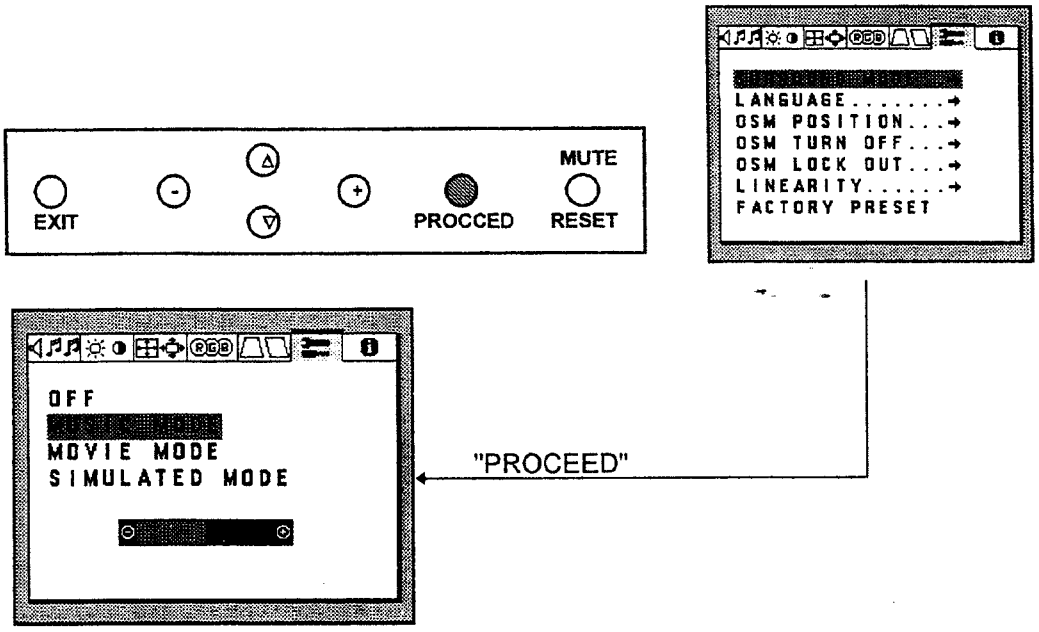
7) Save DATA value to memory

Move highlighted BAR to other "ITEM" or "TAB" (press "EXIT" or "▲", "▼")



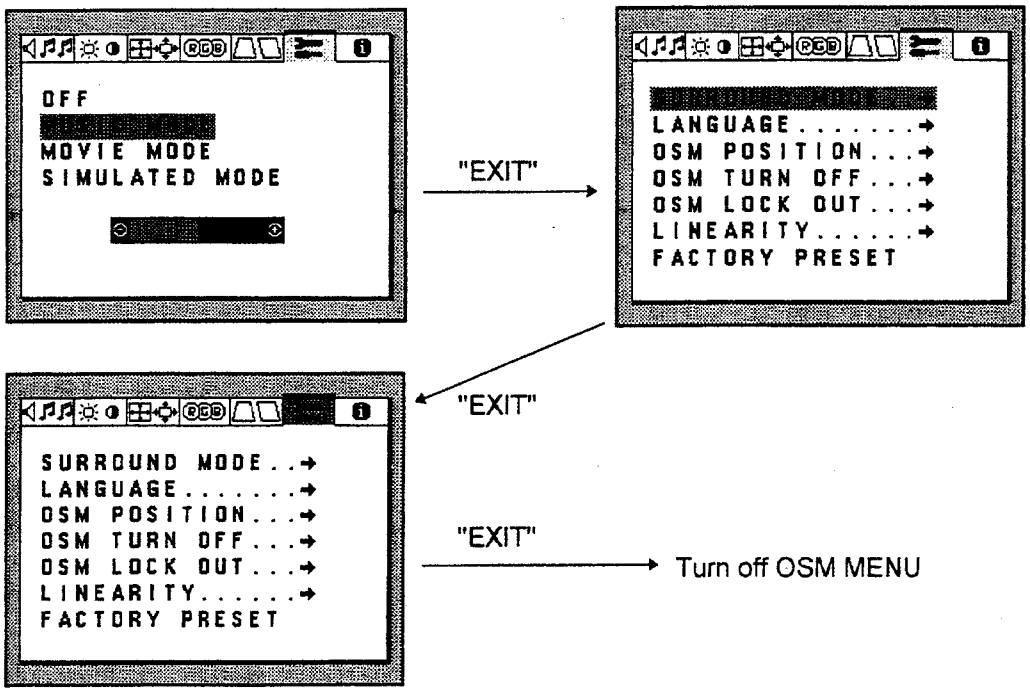
8)Open SUB MENU

Press "PROCEED" switch when the "ITEM" highlighted that contains " ..→"



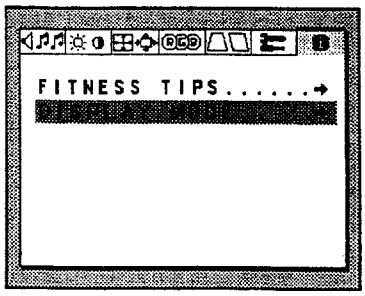
9)Turn off OSM MENU

Press "**EXIT**" switch **once** : when highlighted BAR is on "**TAB**"
twice : when highlighted BAR is on "**ITEM**"
three times : when entering "**SUB MENU**"

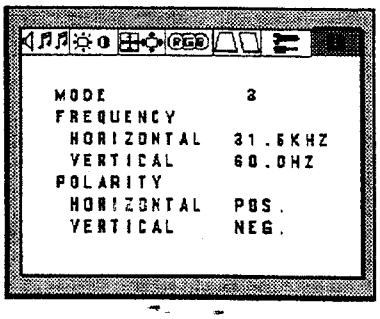


10) Open MENU(s)

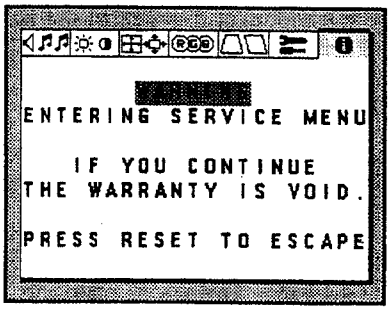
Open menu "INFORMATION" - "DISPLAY MODE"

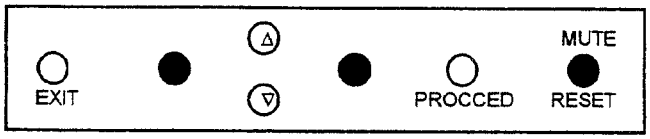


"PROCEED"



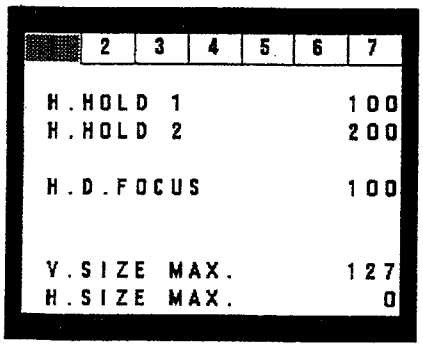
then press "RESET" and "+" , "-" switch at once.





A warning message will be displayed, then press "PROCEED"switch.

"PROCEED"



OSM MENU structure

1. MENU(u)

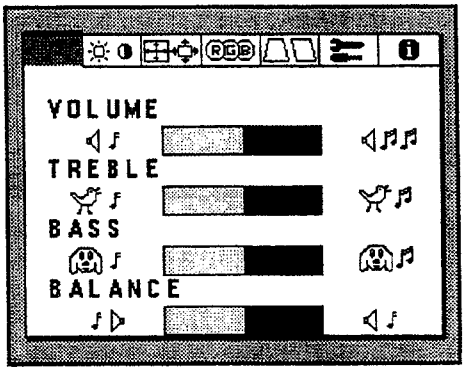


Fig. 3-8 MENU(u) - "SOUNDS"

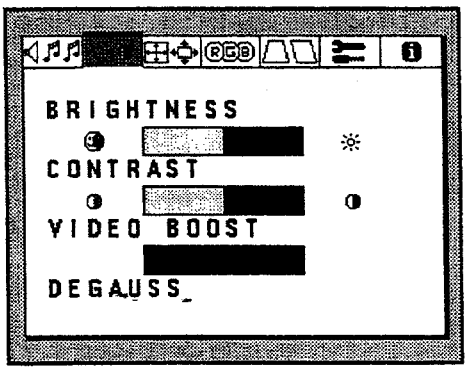


Fig. 3-9 MENU(u) - "BRIGHTNESS & CONTRAST"

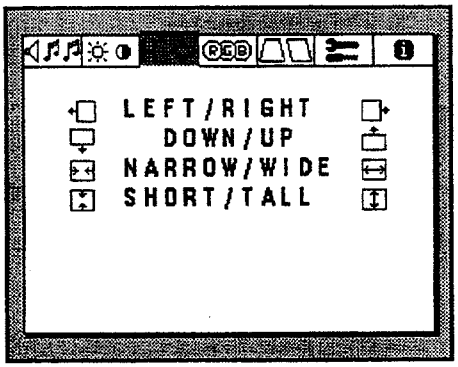


Fig. 3-10 MENU(u) - "SIZE & POSITION"

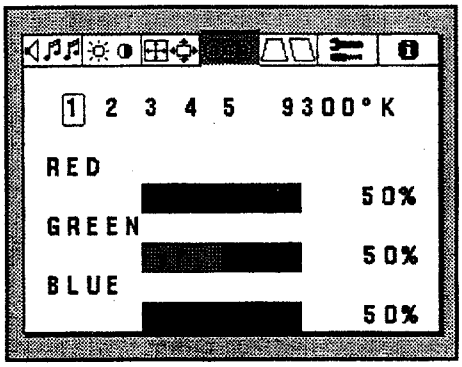


Fig. 3-11 MENU(u) "RGB"

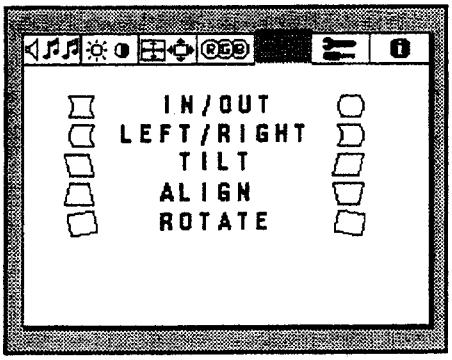


Fig. 3-12 MENU(u) - "GEOMETRY"

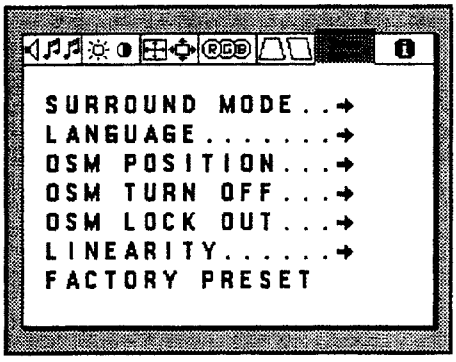


Fig. 3-13 MENU(u) - "TOOL"

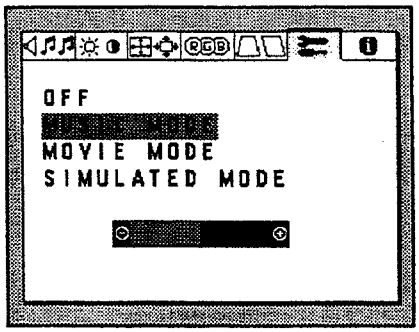


Fig. 3-14 SUB MENU(u) - "SURROUND"

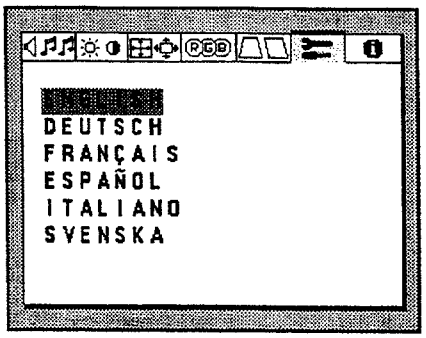


Fig. 3-15 SUB MENU(u) - "LANGUAGE"

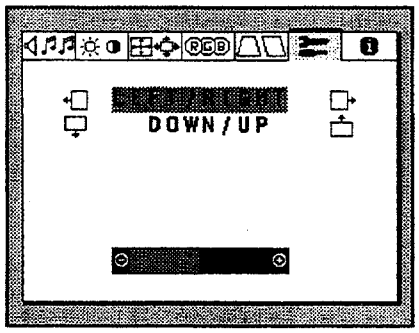


Fig. 3-16 SUB MENU(u) - "OSM POSITION"

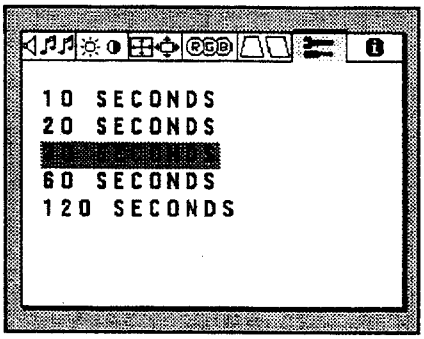


Fig. 3-17 SUB MENU(u) - "OSM TURN OFF"

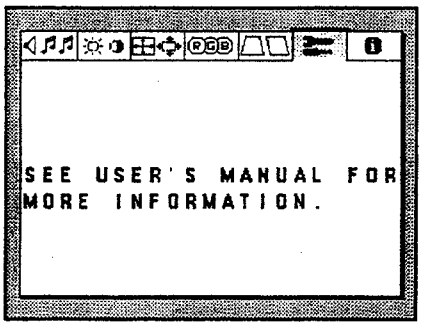


Fig. 3-18 SUB MENU(u) - "OSM LOCK OUT"

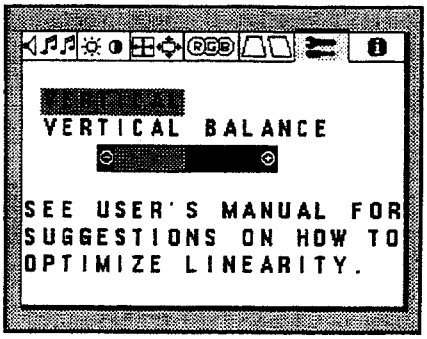


Fig. 3-19 SUB MENU(u) - "LINEARITY"

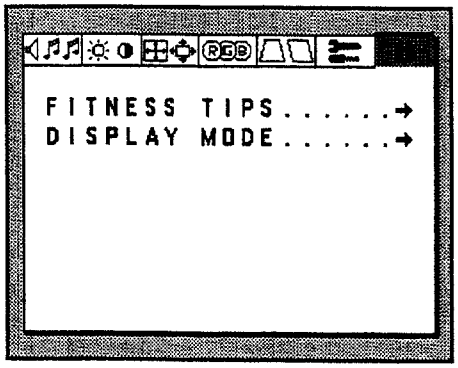


Fig. 3-20 MENU(u) - "INFORMATION"

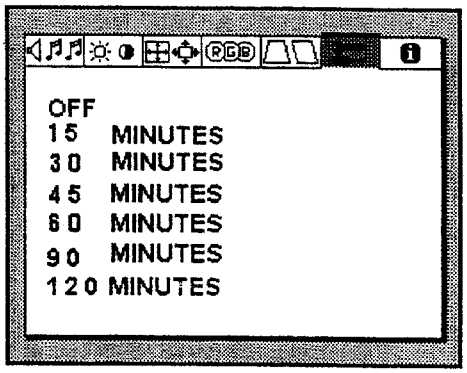


Fig. 3-21 "FITNESS TIPS" setting

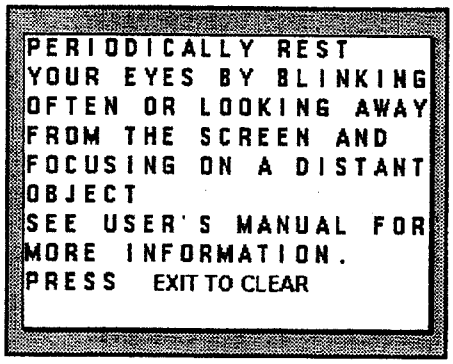


Fig. 3-22 "FITNESS TIPS" MESSAGE - 1

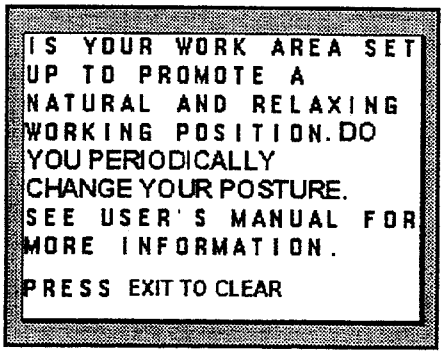


Fig. 3-23 "FITNESS TIPS" MESSAGE - 2

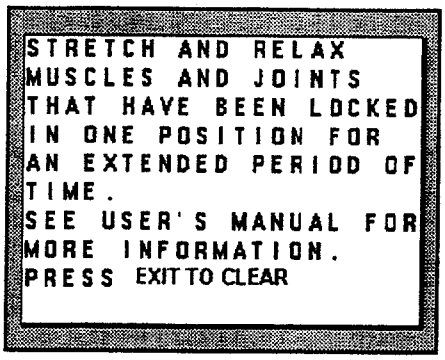


Fig. 3-24 "FITNESS TIPS" MESSAGE - 3

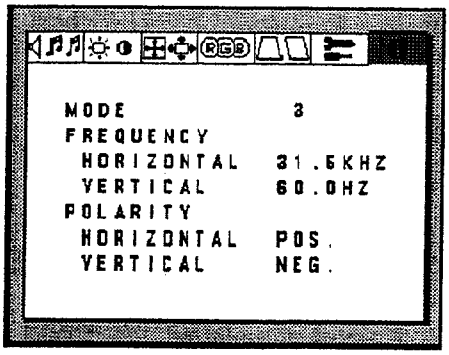


Fig. 3-25 "DISPLAY MODE"

2. MENU(s)

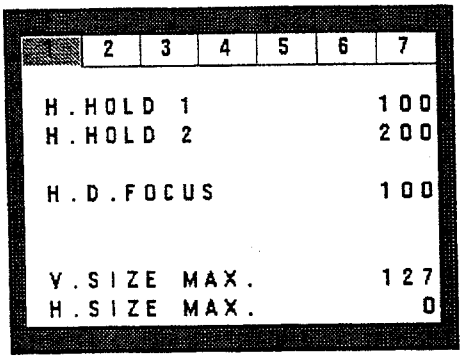


Fig. 3-26 MENU(s) - TAB1

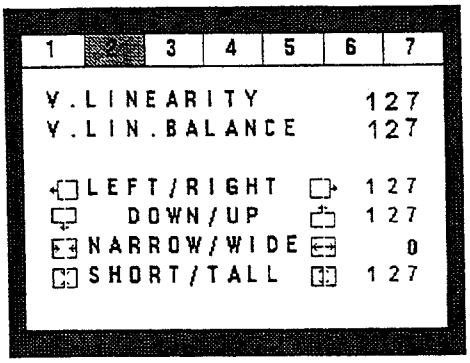


Fig. 3-27 MENU(s) - TAB2

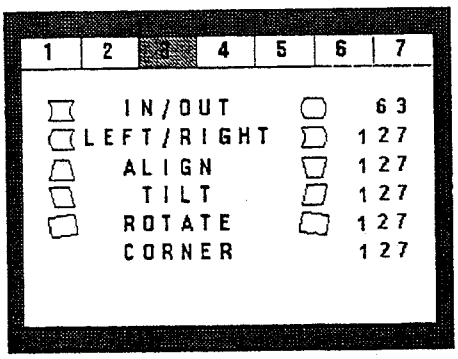


Fig. 3-28 MENU(s) - TAB3

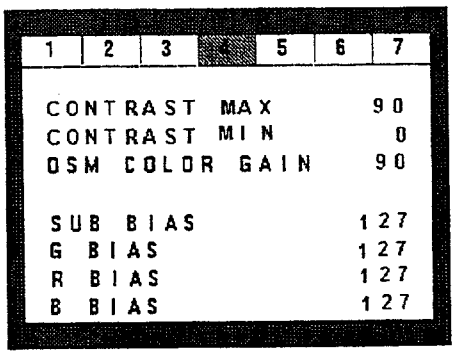


Fig. 3-29 MENU(s) - TAB4

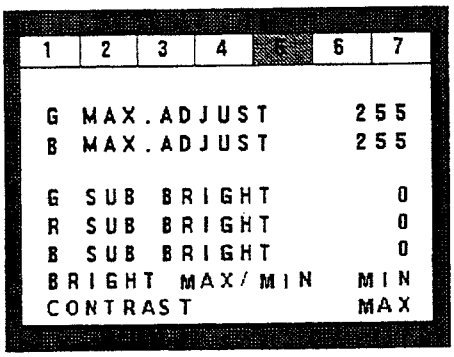


Fig. 3-30 MENU(s) - TAB5

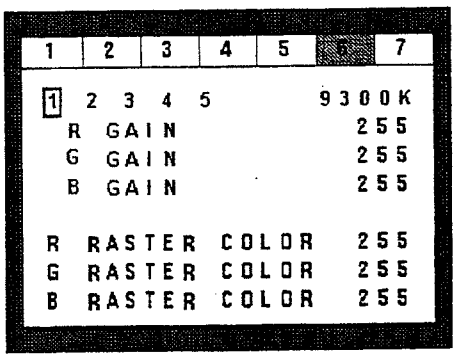


Fig. 3-31 MENU(s) - TAB6

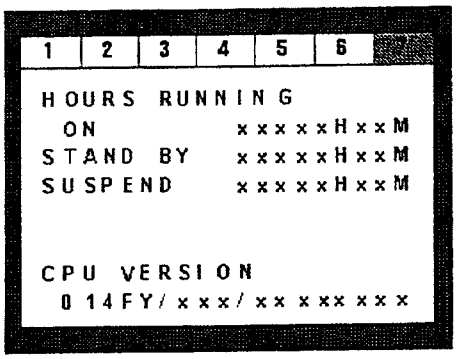
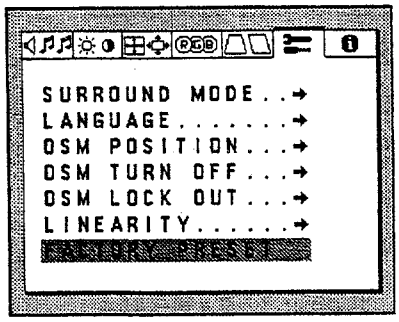


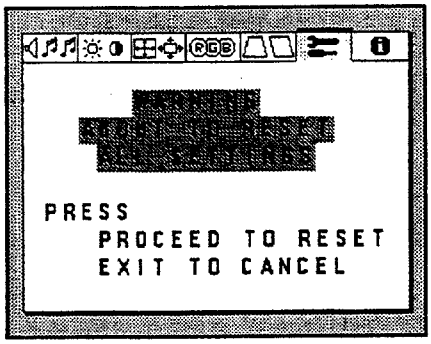
Fig. 3-32 MENU(s) - TAB7

Factory Preset

Open Menu(u) - "TOOL", then move highlighted BAR to "FACTORY PRESET"



"Warning message" will be displayed, when "**RESET**" switch is pressed . .



" RESET "

All user settings are set to "FACTORY PRESET" value when "**PROCEED**" switch is pressed .

See Table 3-10 (next page) about details .

Table 3-10 FACTORY PRESET

TAB	ITEM	preset value
SOUNDS	VOLUME	NO CHANGE
	TREBLE	CENTER
	BASS	CENTER
	BALANCE	CENTER
BRIGHTNESS & CONTRAST	BRIGHTNESS	MINIMUM
	CONTRAST	MAX
	VIDEO BOOST	OFF
	DEGAUSS	----
SIZE & POSITION	ALL ITEMS	SET TO FACTORY PRESET VALUE
R G B	1 2 3 4 5	NO.1
	RED , GREEN , BLUE	SET TO FACTORY PRESET VALUE
GEOMETRY	ALL ITEMS	SET TO FACTORY PRESET VALUE
TOOL	SURROUND	MODE : OFF LEVEL : CENTER
	LANGUAGE	NO CHANGES
	OSM POSITION	SET TO PRESET VALUE
	OSM TURN OFF	30 SECONDS
	OSM LOCK OUT	----
	LINEARITY	SET TO FACTORY PRESET VALUE
	FACTORY PRESET	----
INFORMATION	FITNESS TIPS	OFF
	DISPLAY MODE	----

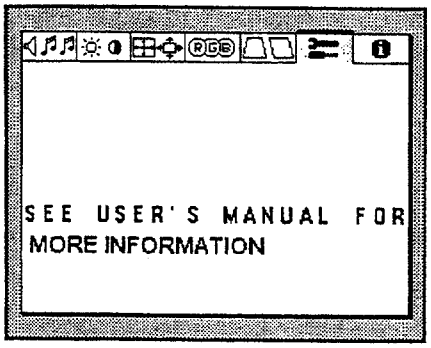
FITNESS TIPS

How to confirm "FITNESS TIPS" message .

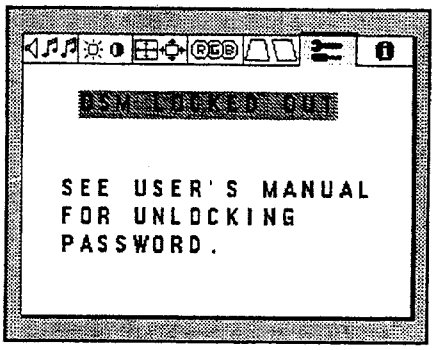
(1) Open SUB MENU(u) - "INFORMATION" - "FITNESS TIPS"
(2) Press "+" and "-" switch at once , then message will be displayed .
(3) Press "+" switch , then message will change.
(4) Press "+" switch , then message will change.
(5) Press "+" switch , then SUB MENU(u) - "INFORMATION" - "FITNESS TIPS" will be displayed .

OSM LOCK OUT

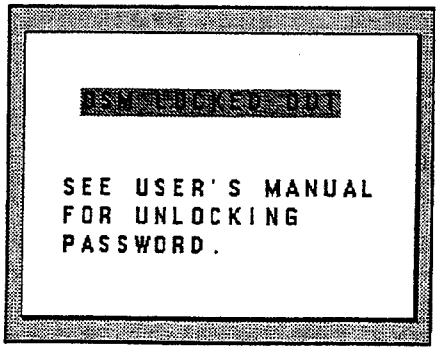
(1) Open MENU(u) - "TOOL"
(2) Move highlighted BAR to "OSM LOCK OUT"
(3) Press "PROCEED" switch while "OSM LOCK OUT" is highlighted , then message will be displayed as below .



(4) Press "▲" and "PROCEED" switch at once , then message will be displayed as below , and OSM is locked out .



(5) Any control switch does not work while OSM is locked out . And message is displayed as below.



(6) To unlock "OSM LOCK OUT". Press "▲" and "PROCEED" switch at the same time.

4. VIDEO CIRCUIT

4-1 Video Pre-amplifier

The analog video signals are received from the mini D-Sub connector pin numbers 1, 2 and 3 (Red, Green and Blue respectively), and then the video signals are applied to the pre-amplifier IC 711 pins 5,8 and 11 (G, R and B). IC711 controls the following functions; the video signals mixing, blanking, contrast and white balance controls. The video signals are mixed with the OSD video signals in IC711, and output at IC711 pins 18, 20 and 23 (B, R and G).

Contrast is adjusted by the voltage between IC731 pins 4 and 5.

White balance controls Red, Green, Blue gains respectively. Red gain is adjusted by IC711 pin 27's voltage. Green gain is adjusted by IC711 pin 28's voltage. Blue gain is adjusted by IC711 pin 26's voltage. These voltages are controlled by IC801 through IC731 and IC732.

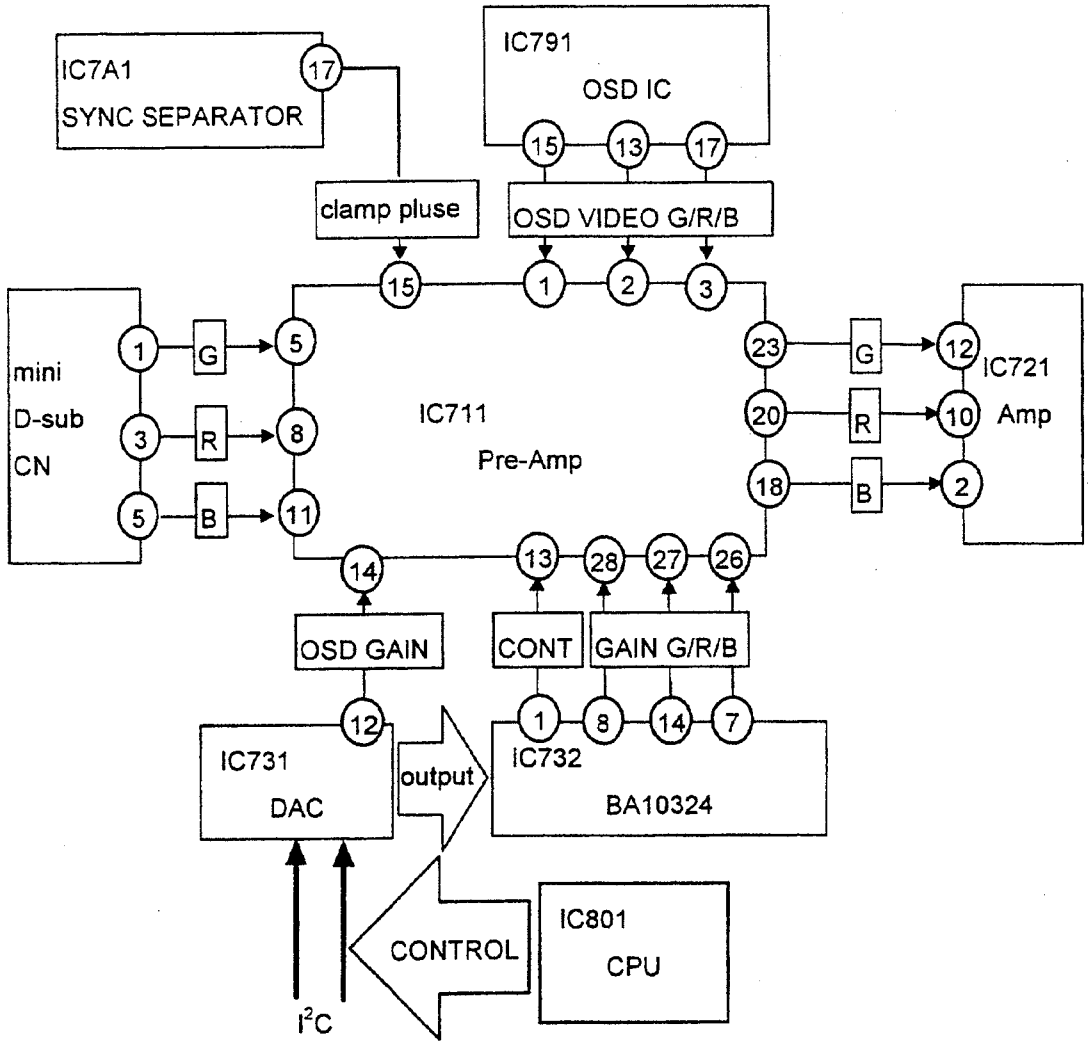


Fig. 4-1 Video Pre-amplifier

4-2 Video Bias Control Circuit

The video signals are amplified to about $48V_{P-P}$ by IC721 and then the signals are biased from IC751 through Q741G, Q741B, Q741R and IC741. IC801 adjust the bias voltage of IC 751.

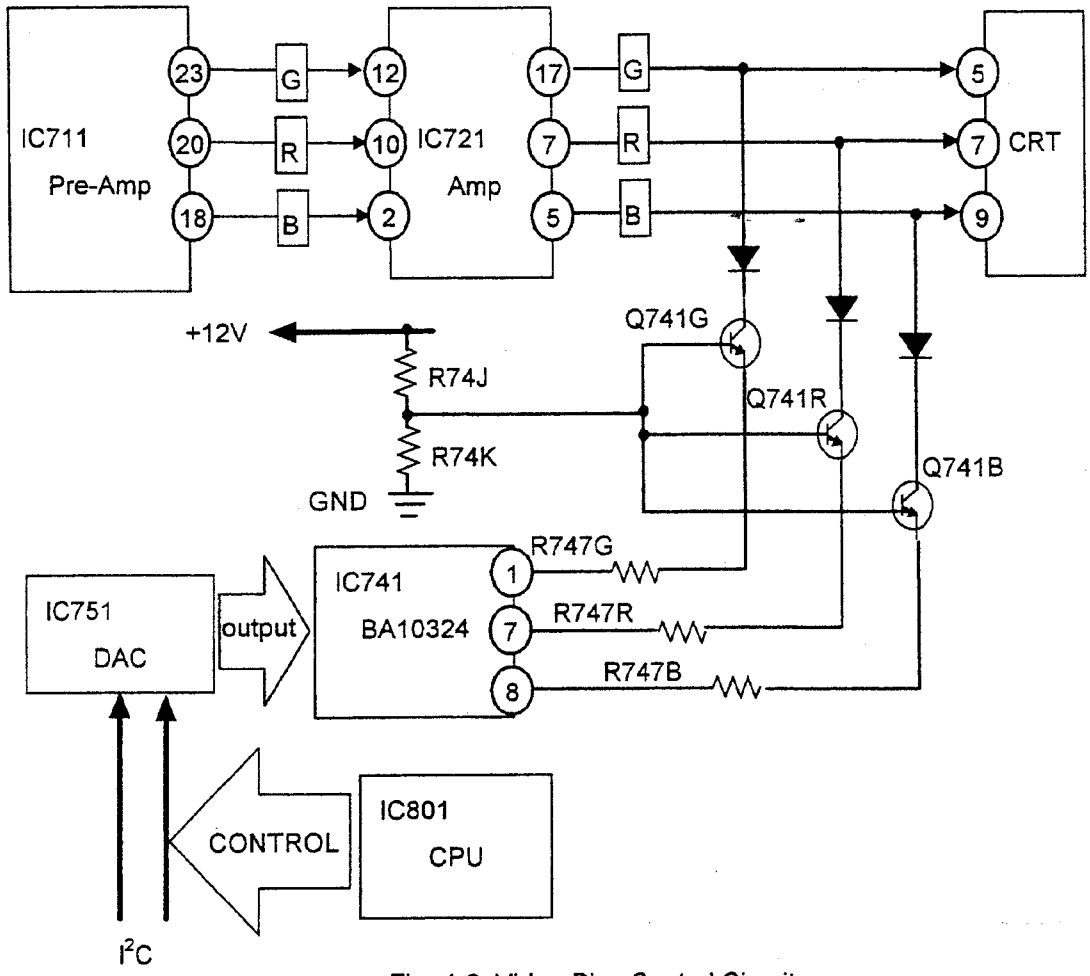


Fig. 4-2 Video Bias Control Circuit

4-3 Blanking Circuit

This circuit generates a negative blanking pulse for G1 of the CRT. The blanking pulse is made by the vertical blanking pulse of IC501 pin 29 on SUB PWB and the horizontal deflection output pulse of FBT pin 8. This blanking pulse is applied to G1 after waveform correction by Q4E1, Q4E2 and Q4E3.

4-4 Spot Killer

This circuit protects the CRT against the spot brightness in the following manner. When the 12 volts line drops quickly, the emitter voltage of Q781 drops. Then Q781 is turned on, and G1 voltage becomes close to -60Vdc, eliminating the single spot from appearing on the CRT.

4-5 ABL (Automatic Brightness Limiter) Control Circuit

The ABL control signal is obtained from the FBT. Q771 is activated when the ABL control voltage drops below 12 volts. Once Q771 is activated, the collector voltages of Q772 and Q773 will decrease and then the video pre-amp (IC711) output swing (Vp-p) decreases.

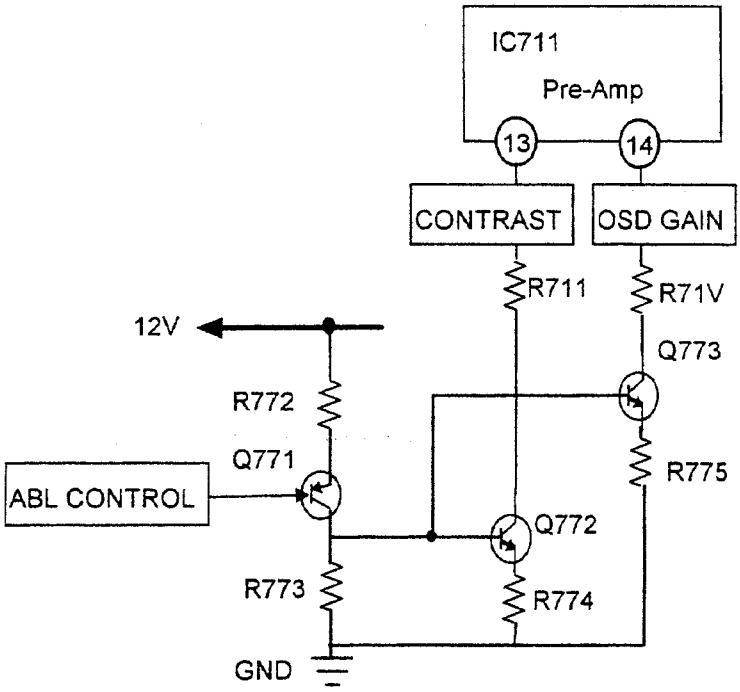


Fig. 4-3 ABL Control Circuit

4-6 Video Boost Circuit

When user pushes "EXIT" switch at "VIDEO BOOST" (MENU BRIGHTNESS & CONTRAST), the control signal of IC791 (OSD IC) pin 14 becomes low by IC801 (CPU), and Video Boost function now operates. Then the selected area become higher levels brightness and contrast than the other.

5. HORIZONTAL DEFLECTION AND HIGH VOLTAGE CIRCUIT

5-1 Horizontal Oscillator / Horizontal Image Phase Shifter Circuit

The controls of the horizontal oscillation and horizontal image position are done by IC501.
The internal functions of IC501 control the following circuits.

- 1st delay circuit
- Horizontal oscillation circuit (H-OSC)
- F/V delay circuit
- FBP delay circuit
- AFC circuit
- Duty variable circuit

a. Horizontal Oscillator

The horizontal sync signal output from of IC7A1 pin 15 on the VIDEO PWB is input to IC501 pin 26 on SUB PWB. Horizontal oscillation frequency is determined by the voltage applied to pin 19 and the current flowing out of pin 20. The pulse(8.3Vp-p) at pin 18 whose frequency is same as that of input sync signal , is output and applied to the horizontal drive circuit. The duty ratio of the output pulse is regulated to 44% by the voltage applied to pin 23.

b. Horizontal Image Phase Shifter Circuit

The horizontal position of the picture is controlled by horizontal sync signal, the 1st delay output signal generated by charging and discharging the internal capacitor, FBP input and FBP delay output wave form generated by charging and discharging the internal capacitor. Therefore by varying the 1st delay quantity with the DC voltage applied to pin 25, the position of the picture is controlled.

5-2 Horizontal Drive Circuit

H drive pulse supplied from IC501 PIN 18 on the SUB PWB is buffered by Q510 (SUB PWB), Q552 and Q553 (MAIN PWB). The buffered drive pulse is supplied to the gate of Q555 which is H drive transistor to drive deflection and high voltage output circuit by turning on and off. T551 is drive transformer to supply Q561 base current .

5-3 Distortion Correction Circuit

a. Side Pincushion and Vertical Trapezoid Distortion Correction Circuit

The parabolic waveform that is the side pincushion and vertical trapezoid distortion correction waveform output from IC501 pin 10 is supplied to the horizontal size control circuit on the SUB PWB. Its amplitude is controlled by side pincushion distortion correction control voltage input to pin 3 and its bias is controlled by vertical trapezoid distortion correction control voltage input to pin 2 of IC501.

b. Parallelogram Distortion Correction Circuit

The saw tooth wave form output from IC501 pin 28 is controlled by DC voltage input to pin 4. Parallelogram distortion is corrected by this wave form input to pin 25 (1st delay terminal) through C522. When DC voltage input to pin 4 is approximately 2.5V, corrective quantity is 0.

5-4 Horizontal Deflection And High Voltage Output Circuit

a. Horizontal Deflection Output Circuit

The drive pulse is applied to the base of Q561 turning it on and off. The sawtooth wave form deflection current is generated in the deflection yoke and high voltage is generated in the second winding of the FBT. The AFC pulse and HV protector detection voltage is generated in the third winding. This deflection current sweeps the beam in the horizontal direction. This horizontal deflection circuit consists of the combination of a main and auxiliary generator.(This deflection circuit is called Diode Modulation Circuit) The main generator consists of deflection yoke, Q561, D561, C561, L571 and C57F the auxiliary generator consists of modulation coil L562, C562, C563, Q591 and D562.

By varying the voltage of C563 at auxiliary generator, the main circuit can vary horizontal size and pincushion distortion. L571 is the horizontal linearity coil to balance left and right the horizontal linearity. C573, C576, C578, C57A and C57F correct for the "S" characteristic and change the parabolic wave form generator at both ends of the capacitor by the inflow current.

H frequency (kHz)	C57F	C57A /Q57A	C578 /Q574	C576 /Q573	C573 /Q57F
		Fh1	Fh2	Fh3	Fh4
24k ~ 27k	ON	ON	ON	ON	ON
27k ~ 30k	ON	OFF	OFF	OFF	ON
30k ~ 34k	ON	OFF	ON	ON	ON
34k ~ 36.5k	ON	OFF	ON	OFF	ON
36.5k ~ 40k	ON	OFF	OFF	OFF	ON
40k ~ 44k	ON	OFF	ON	ON	OFF
44k ~ 47.5k	ON	OFF	OFF	ON	OFF
47.5k ~ 51k	ON	ON	ON	OFF	OFF
51k ~ 55k	ON	OFF	ON	OFF	OFF
55k ~ 59k	ON	ON	OFF	OFF	OFF
59k ~62k	ON	ON	OFF	OFF	OFF
62k ~67k	ON	ON	OFF	OFF	OFF
67k ~ 70k	ON	OFF	OFF	OFF	OFF

The flyback pulse width of C561 is determined by the DY' induction, other inductors and the capacity of resonance capacitor C561. This pulse width is about 2.7us. Also input supply voltage of FBT pin 3 (≒ C5G3 Voltage) varies depending upon frequency. The pulse level approximately constant in all frequency by negative feedback of high B+ chopper circuit. Therefore the high voltage regulation is constant in all frequencies. The duration of the pulse generated at C562 is approximately 2.7us or less than 2.7us. This pulse level changes by varying C562's voltage by manipulating the horizontal width control and side pincushion control circuit. As C562's voltage decreases the horizontal width increases.
The horizontal size (horizontal deflection current) is defined as the difference between the C5G3 and C562' voltages when the high voltage is constant. C562 follows the high B+ voltage to maintain constant horizontal size despite beam fluctuations by horizontal control circuit.

b. High Voltage Circuit

Q561 turns on and off generating the flyback pulse on the FBT's primary winding. The FBT boosts this pulse in the second winding to about 24kV (high voltage) and supplies it to the CRT's anode. The AFC pulse and protector detection voltage are generated in the third winding of FBT. The high voltage is divided by FBT's internal resistors ,R5R3 and VR5R1. The detection voltage is supplied to high B+ control circuit (IC5H2) to keep constant high voltage by negative feed back loop.

5-5 Horizontal Size Control Circuit

Horizontal size is varied by the voltage of C563. The circuit to control this voltage is composed of IC591, Q591 and Q592. The H size user control DC voltage supplied IC591 pin 9 is amplified and is added IC591 13 pin. IC591 pin 12 is supplied B+ divided voltage by R591 and R59A to keep constant H.size for change of B+. H.size (horizontal deflection current) is defined C563 voltage which is nearly defined IC591 pin 1 voltage , R592 and R593 by following formula and B+ voltage.

$$VM = \{(R592 + R593) / R593 \}^* V14$$
$$Iy = (B+ - VM) / LH$$

VM(v) : C563 voltage
V14(v) : IC591 14 pin voltage
Iy(App) : horizontal deflection current
LH(H) : horizontal yoke inductance

Therefore the horizontal size can be expanded by decreasing C563 voltage and can be reduced by increasing C563 voltage.

5-6 H Centering Circuit

Switching regulator generates the floating 5 volts which is compared to the deflection circuit power supply voltage (high B+ voltage). This voltage is divided by VR581 (H centering) and is supplied to the base of Q581. The voltage differences of Q581's base and emitters is supplied to L581.
Horizontal centering is manipulated by the current supplied by L581 to the horizontal deflection circuit.

5-7 High B+ Chopper Circuit

High B+ chopper circuit consists of the sawtooth generator, error amplifier and step down chopper circuit. This circuit forms negative feedback loop to maintain constant high voltage.

a. Sawtooth Wave Generator

Q5H2 is a fixed current source and adds charging current to C5H6. When the differentiated H drive pulse is applied to the base of Q5H7 through C5H9 to discharge C5H6. Then the sawtooth wave form is generated on C5H6.

b. High B+ Chopper Controller

This circuit controls the rectangular wave output duty cycle by comparing the sawtooth wave with feed back control voltage from high voltage detection circuit. Operational amplifier in IC5H2 works as error amplifier which determines feed back loop gain. The error voltage is output from IC5H2 pin 1 and is supplied to IC5H1 pin 2 which compare the sawtooth wave inputted IC5H1 pin 3 with pin 2 voltage. The comparator at IC5H1 pin 1 outputs the rectangular wave voltage.

The duty cycle of this rectangular wave varies by error voltage to keep constant high voltage and is supplied to Q5G1 gate through Q5H9 and Q5HA.

c. High +B Chopper Output

This step down chopper circuit consists of Q5G1, D5G3, L5G3 and C5G3. Q5G1 turns on and off by adding rectangular wave voltage to Q5G1's gate and its source supplies 195Vdc, therefore, a 195Vp-p rectangular wave is generated on Q5G1's drain and this is rectified by D5G3, L5G3 and C5G3.

Therefore, the rectified voltage is added to the horizontal deflection circuit and operates by varying duty cycle.

5-8 Protector Circuit

This model employs three separate protection circuit as follows.

a. The first protect circuit becomes active when the FBT high voltage increases abnormally. (HV Protector)

b. The second circuit becomes active when the power supply input current to the FBT's primary side increases abnormally. (Leak Protector of FBT Primary Side)

c. The third protect circuit monitors the second side of the FBT and becomes active in the event of a FBT layer short. (Leak Protector of FBT Second Side)

a. HV Protector

The HV protector consists of R2002, R2003, R2004, ZD2001, D2002 and thyristor circuit (R200E, R200F, R2009, Q2006, Q2007). The output pulse at the FBT pin 5 is rectified by D2001 and C2001, whose pulse increases as the HV increases, and is divided by R2002 ,R2003 and R2004.

When the rectified HV voltage increases abnormally, ZD2001 is reversed biased and conducts and then thyristor circuit is turned on.

Thyristor circuit turns on when its input voltage exceeds 0.62 volts. This thyristor circuit is active and will remain active until the power supply voltage decreases.

When this circuit is active, horizontal drive pulse stops and the high voltage decreases to 0 volts.

b. Leak Protector of FBT Primary

Leak protector of FBT primary consists of R5F1, C5F1, Q5F1, R5F3 and thyristor circuit. If the input power supply current increases abnormally, the voltage across R5F1 increases. When the voltage across R5F1 increases and Q5F1's base emitter voltage exceeds 0.55 volts, Q5F1 is turned on and thyristor circuit is turned on.

c. Leak Protector of FBT Secondary

Leak protector of FBT's secondary consists of ZD2002, Q2001 and thyristor circuit. when the current in the second winding of FBT increases abnormally, the voltage of FBT pin 10 decreases. When the voltage becomes about 0 volts, ZD2002 conducts and Q2001 turns on. Therefore thyristor circuit turns on.

6. VERTICAL DEFLECTION CIRCUIT

The vertical deflection circuit consists of the following blocks:

1. Sawtooth wave form generator and wave form correction section
2. Vertical raster position control section
3. Vertical output amplifier section

6-1 Sawtooth Wave Form Generator and Wave Form Correction Section

The vertical sync signal from IC7A1 on VIDEO PWB is fed to IC501 pin 27 (uPC1883CT)on SUB PWB, so that the sawtooth wave form synchronized with the input signal is output from IC501 pin 9.
The amplitude of the sawtooth wave form is controlled by the voltage at IC501 pin 8.
IC501 controls the amplitude which is constant independently of frequency.
In addition, the output sawtooth wave form of IC501 is corrected for vertical linearity.
In IC501, square wave form and cubic wave form are added to sawtooth wave form to correct linearity.
The amount of correction is controlled by the voltage applied to pins 8, 11, 12 and 13 (vertical size pin 8, vertical position pin 11, S correction pin 12 and C correction pin 13). The voltage at pins 12, 13 are D/A converter output.
As a result, the optimum linearity can be obtained even when the vertical size and vertical position are changed.

6-2 Vertical Raster Position Control Section

The vertical raster position is controlled by changing the amount of DC bias of the input signal to IC401.
IC502 subtracts the voltage at IC501 pin 11 (vertical position voltage) from the voltage at IC501 pin 9 (sawtooth wave form output), and then the amount of DC bias of the input signal to IC401 is changes.

6-3 Vertical Output Amplifier Section

The current proportional to the input voltage to IC401 is supplied to the vertical deflection coil (V-DY). The vertical deflection current is taken as voltage wave form by R410 and feedback to IC401.

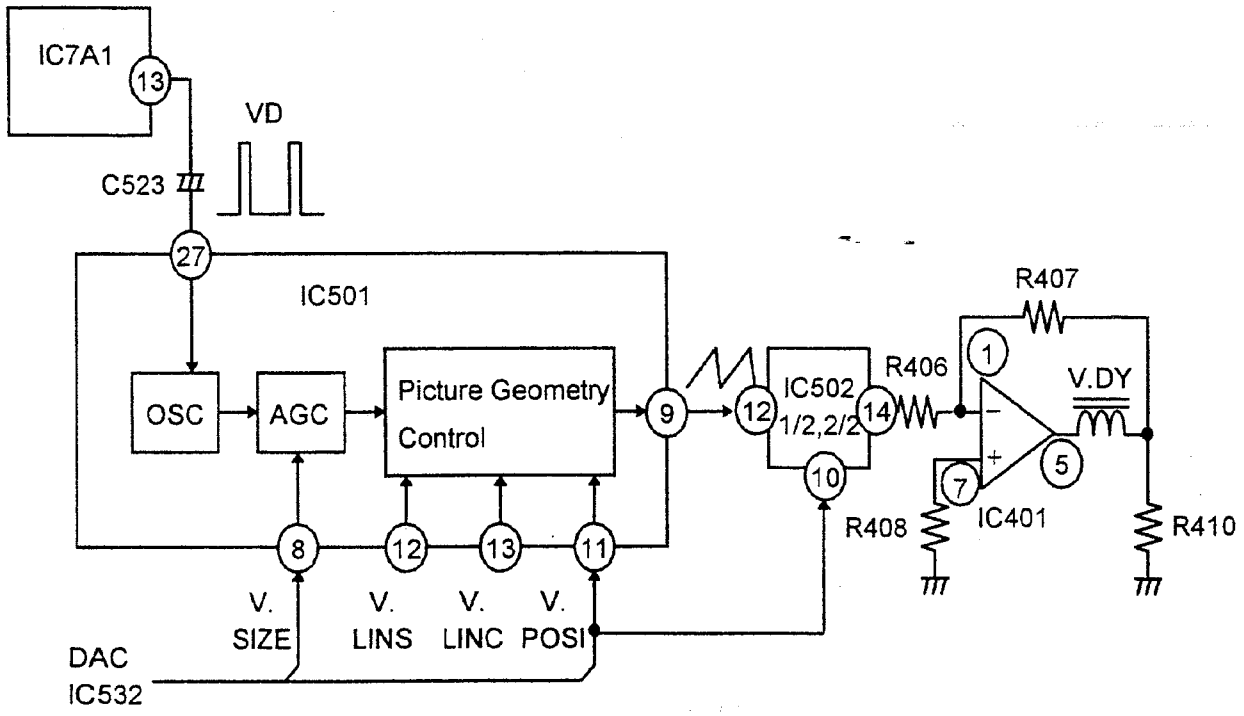
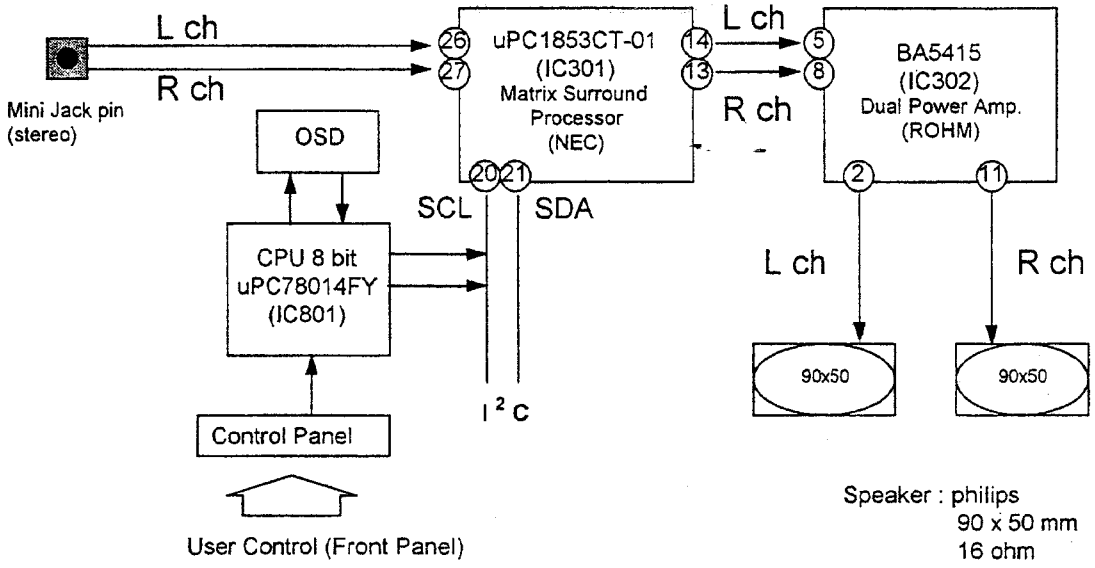


Fig. 6-1 Vertical Deflection Circuit

7. SOUND CIRCUIT

IC301 controls the follow Audio functions: volume, balance, bass, treble and surround effect. The signals at IC301 pins 13 and 14 are amplified by IC302.



7-1 Surround Function

OFF mode

Original signal is output directly.

Voice / Standard mode

The signal passed through the phase shifter (indirect sound) is added to the original signal. The level of indirect sound signal (surround signal) added to the original signal which can be adjusted to 16 levels.

(Movie, Music and Simulated mode)

Movie / TV mode (Phase shifter: 4 units)

Music / Game mode (phase shifter: 1 unit)

The phase difference between L-channel and R-channel signals is shifted and added to original signal.

Mono to Stereo mode (Phase shifter : 4 units)

The phase difference between the signal through HPF and the signal through LPF is shifted and the signals are added to the original signal.

8. DYNAMIC FOCUS CIRCUIT

The dynamic focus section is made up of the following three blocks:
The dynamic focus (D-FOCUS) IC (IC951 : UPC5022-96) which has the function of generating the horizontal/vertical parabolic wave as well as that of controlling the gain,the output amplifier (SUB PWB PWE-461B),and the coupling circuit.

1) Horizontal Parabolic Wave Generation and Gain Control Circuit

The FBP of the secondary of the horizontal output transformer which has been waveform shaped to the horizontal drive pulse (H D) is input to IC951 pin 24.
This pulse is used as a trigger and a sawtooth wave is generated at the sawtooth oscillator section and pin 17's externally connected capacitor,and at pin 16 constant current producing circuit.The sawtooth wave is converted to a parabolic wave at the X2 circuit and the parabolic wave gain is adjusted with the pin 27 input voltage,i.e.,the sub horizontal dynamic focus voltage. To set the peak voltage of this parabolic wave to an optimum amplitude with respect to the horizontal frequency and horizontal size,tracking is taken at the pin 9 input voltage,i.e.,the horizontal dynamic focus voltage.
The final horizontal parabolic wave is output from pin 10.

2) Vertical Parabolic Wave Creation and Gain Control Circuit

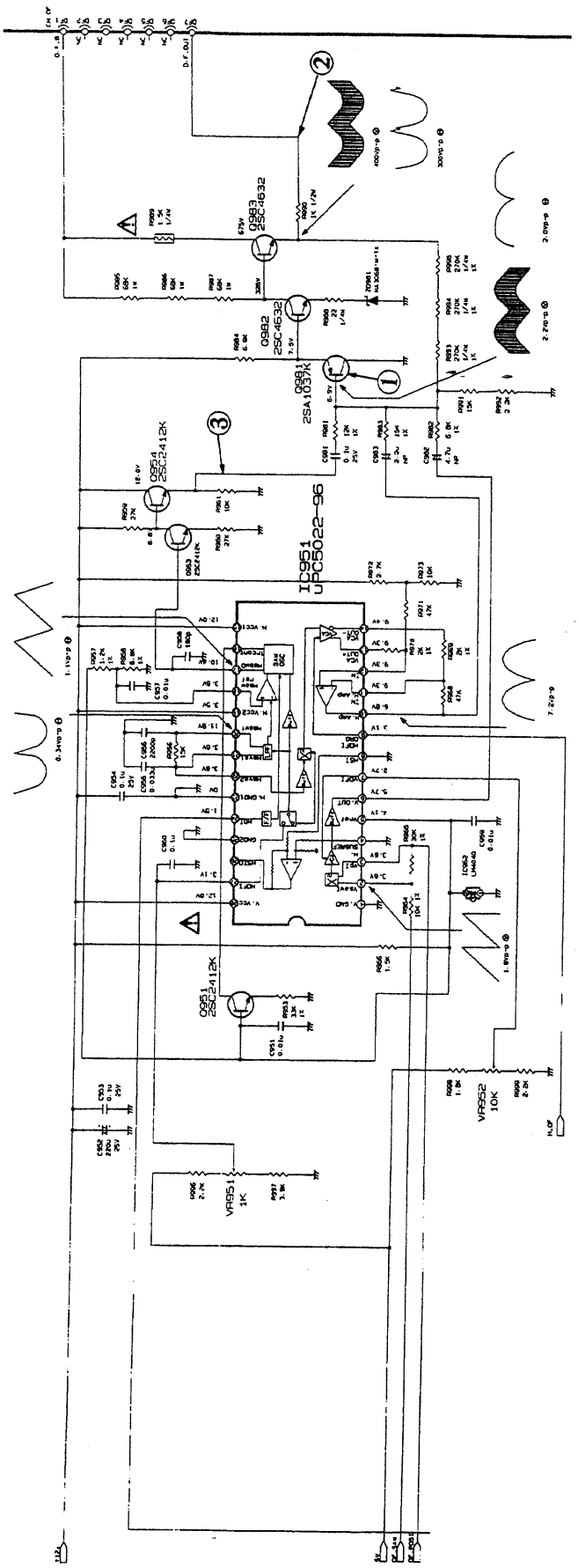
The vertical sawtooth wave produced by the oscillator IC (IC501 : UPC1883) is input to IC951 pin 2 and is converted to a parabolic wave in the X^2 circuit.
The gain of this parabolic wave is VCA controlled by the pin 7 input voltage, i.e.,the vertical dynamic focus voltage.The result is output to pin 6.

3) Output Amplifier Circuit

This block is the same as in the 5FGe/5E/XE17. ① is the input. ② is the output.
R993 through R995 are used for feedback.(R993 + R994 + R995) / (R991 + R992) determines the output DC bias.(R993 + R994 + R995) / R983 determines the horizontal parabolic amplifier gain. ③ is the sawtooth wave input for correction against the delay time.

4) Coupling Circuit

This block consists of an extremely high impedance resister and coupling capacitor.
These components are located in the FBT and the output wave is supplied to dynamic focus terminal.



REPLACEMENT PARTS LIST

The components specified for Model JC-1735VMA

Note: The components identified by ⚠ make are critical for safety.
Replace only with parts Number specified.

SYMBOL			PARTS NO	DESCRIPTION
*** CRT & TUNER ***				
⚠CRT			33017549	CRT M41LJC101XX20(U3)
*** ICS ***				
IC671			370A1009	IC UPC1093J-T (REG)
IC952			370KE011	IC LM4040CIM3-4.1(X)
IC302			37001117	IC BA5415A (AMP)
IC361			37005193	IC PQ12RF11 (REG)
IC503			37005221	IC UPC78M09AHF
IC331			37005270	IC UPC2412AHF
IC803			37005277	IC PQ05RR13 (REG)
IC401			37006019	IC TEA8172
IC501			37009034	IC UPC1883CT
IC501			37009035	IC UPC1883CT(MS)
IC420			37011307	IC LA6501MA (OP AMP)
IC301			37011326	IC UPC1853CT-01
⚠IC951			37011333	IC UPC5022CT-096 (100MV)
IC711			37011346	IC LM1282N(VIDEO PRE AMP)
IC7E1			37053198	MOS HD74HC08P
IC802			37055537	MOS NM24C04EN
IC502			37056115	IC UPC4741C
⚠IC5H1			37056615	IC BA10393
IC5H2			37056616	IC BA10358
IC591	IC732	IC741	37056926	IC BA10324A (Q OP-AMP)
IC8A1			37074324	MOS 24LC21-I/P (E-EPROM)
IC821			37076081	IC UC3842N
IC531	IC532	IC731	37076176	MOS M62393P
IC751				
IC791			37076298	MOS M35043-052SP
IC7A1			37076304	IC M52347SP
IC721			37076309	IC VP513
IC801			37076329	MOS UPD78014FYCW-W07
*** TRANSISTORS ***				
Q5R1	Q623	Q624	350D7216	TR 2SC945-T P
Q626	Q628	Q630		
Q632	Q671	Q672		
⚠Q2006	Q5H9	Q552	350D7217	TR 2SC945-T Q
Q629			350F4211	TR 2SD571-T K

SYMBOL			PARTS NO	DESCRIPTION
Q581	Q7F1		350G1018	TR 2SD2005-T105 R
Q781			350H4418	TR,2SC1473-TA R
Q101	Q102	⚠Q2007	350K3517	TR 2SA733/2SA733A-T Q
Q5HA	Q553	Q592		
Q825	Q627			
⚠Q5F1			35011500	TR 2SA1767
Q591			35071506	TR 2SD1957 F
Q741B	Q741G	Q741R	35084417	TR,2SC1473 Q
Q982	Q983		35094940	TR 2SC4632LS
⚠Q561			35095220	TR 2SC5302
Q361	Q57A	Q576	351G0531	TR AA1L4M-T
Q577				
Q2001			351G0561	TR DTA144ES-T
Q571			351G0602	TR DTC144ES-T
Q103	Q104		351G0641	TR DTC114YS-T
⚠Q573	⚠Q579		35127300	TR 2SK947-M
Q5G1			35127470	TR 2SJ306
Q555			35127630	TR 2SK1904
⚠Q57F	⚠Q574		35127890	TR 2SK2518-01MR
⚠Q601			35127900	TR 2SK2771-01R
Q621	Q622		355D2715	TR BA1A4M
*** DIODES ***				
ZD624			360KC117	DIODE RD39EB(4)-T1
ZD601			360KC186	DIODE RD22E B1-T1
ZD341			360KC671	DIODE RD12ESB(2)/ESAB(2)
⚠D2002	D301	D5G1	360K1027	DIODE 1SS132
D5G2	D605	D624		
D625	D627	D628		
D630	D631	D632		
D634	D658			
ZD621	ZD625		360K3098	DIODE RD12EB(3)-T4
ZD624			360K3117	DIODE RD39EB(4)-T4
ZD601			360K3186	DIODE RD22EB(1)-T4
ZD623			360K3602	DIODE RD2.0ESB(1)-T4
ZD5E1	ZD629		360K3643	DIODE RD6.2ES AB2-T4
ZD7F1			360K3647	DIODE RD6.8ESB(2)-T4
⚠ZD2001			360K3652	DIODE RD7.5ESB(3)-T4
ZD341			360K3671	DIODE RD12ES AB2-T4
ZD2002			360K3675	DIODE RD13ESB(2)-T4

SYMBOL			PARTS NO	DESCRIPTION
ZD626			360K3692	DIODE RD20ESB(3)-T4
ZD2003			360K3699	DIODE RD24ES AB1-T4
ZD628			360K3711	DIODE RD30ESB(3)/ESAB(3)
D621	D622		361KG523	DIODE ERA15-04
D602			361K7174	DIODE RU1P V1
D550			361K7312	DIODE EP01C-V
D621	D622		361K7523	DIODE ERA15-04V1
⚠D2001			361K7562	DIODE EGP10G G23
D603	D629	D633	361K7570	DIODE DINL20
D656				
D57A	D57H	D576	361K7754	DI 1SR139-600 T31
D578				
D552			36107293	DIODE RK14
D654	D655		36107352	DIODE RL2Z-LFC4
D5G3	D553		36107518	DIODE RG2
D651	D652		36107694	DIODE RG4A(LF-K2)
⚠D561			36107716	DIODE FMP-3FU
D653			36107729	DIODE YG901C2
⚠D562			36107764	DIODE ERD09-15J9
⚠D601			36108201	DIODE,NETWORK D5SBA60S
LED101			36801021	LED SML19416W-LF38
LED601			36801397	LED SEL1915CAM-LF58(C,D)
D401	D5H1		369K2136	DIODE RGP10G,AT
⚠TH601			38102046	THERMISTOR 902P61D050MP14
⚠TH602			38102068	THERMISTOR SCK-056L
⚠PC601	⚠PC602	⚠PC603	38200354	PHOTOCOUPLER PC123FY2
*** TRANSFORMERS ***				
⚠T551			45804021	TRANS,H.DRAIVE
L5G3			46206014	COIL,CHOKE 4MH
⚠T601			46309810	SWITCHING TRANS(46309810)
⚠T5R1			47105706	FBT
*** VARIABLE RESISTORS ***				
VR952			410G1313	R,VARIABLE B10K
VR581	VR951		410G1407	R,VARIABLE B1K
⚠VR5R1			415K5162	R,VARIABLE 100K
VR671			41505103	R,VARIABLE B500

SYMBOL			PARTS NO	DESCRIPTION
*** RELAYS & SWITCHES ***				
SW581			65161081	SWITCH SLIDE 00220867
S101	S102	S105	553F0067	TACT SWITCH PCO 05K
S106	S107			
S103			65360047	TACT SWITCH KSM0642A
⚠SW601			65360060	PUSH SWITCH ESB91631AXL
⚠RL601			65660038	RELAY SDT-SS-112DM
*** COILS & FILTERS ***				
LC7A1	LC7A2	LC711	390J9027	FILTER ZJSC-R12-100TA
LC791	LC792B	LC792G		
LC792R				
MRC801	MRC802		39040002	RC,NETWORK 10K 1K 0.01UF
MRC803			39040003	RC,NETWORK 1K 0.01UF
⚠L562			60906064	COIL,WIDTH(80UH)
⚠L571			60919166	COIL,H.LIN 15T
L791			610E1711	COIL,FILTER 3.3UH
L721			610E1727	COIL,FILTER 68UH
L802			610E1737	COIL,FILTER 470UH
⚠L561			610F3014	COIL,FILTER 3.3UH
L361	L5G1		610F3025	COIL,FILTER 47UH
L657	L658	L659	610F5002	FERRITE BEADS (B-02-RT)
L660	L661			
L901	L902	L903	610F8036	COIL,FILTER 0.39UH
L601			610G0111	INDUCTOR,BEADS(FBR07HA121
L652	L654	L655	610G0257	COIL,CHOKE 33UH
L651	L656		610G0262	COIL,CHOKE PJ85-101K
L551			610J9125	COIL,FILTER 220K LHL10TB
L301			610J9128	FILTER COIL 102J LHL10TB
⚠L5R1			610J9130	FILTER COIL SPT0406A100K
⚠FL601	⚠FL602		61062216	LINE FILTER (SS24V-15045)
L581			61070257	COIL,CHOKE 8MH (K)
L653			61099107	FILTER CHOKE 33UH 2.0A
⚠DEG			61317109	DEGAUSSING COIL(23.4H 120
LC721			616K6027	NOISE FILTER 2A222-TA
LC742	LC743	LC771	616K6028	NOISE FILTER 1H223X-TA
LC8A1	LC901			
LC701B	LC701G	LC701R	616K6827	NOISE FILTER
LC741			616K6966	NOISE FILTER
D5G3			61605135	FERRITE CORE

SYMBOL	PARTS NO	DESCRIPTION
*** PWB ASSYS ***		
	84R36C01	VIDEO PWB ASSY
	84R36F01	MAIN PWB ASSY
*** ELECTRICAL PARTS & MISCELLANEOUS PARTS ***		
SG901 SG902 SG903 SG904	329J0047	ARRESTER (300V),AT52
CN-GND	32990205	INSULATING CAP TIC-3.5(
SP	63010602	SPEAKER 90*50MM 16H 2W PH
X801	64098039	X'TAL(10.000MHZ)
⚠F601	66699064	FUSE UL(ET) 250V 4A
F601	66699065	FUSE S506 - 250V - 4A
SG905	667K6007	SPARK GAP 1.5KV
CN-CRT	70032063	CRT SOCKET CVT3256-0175
JK301	70505059	EARPHONE JACK
JK302 JK303	70505082	JACK,HEADPHONE YKB21-5130
⚠IN601	70521064	AC RECEPTACLE
ADAPTE	70599121	ADAPTER D15P-MD15P 021
CORD	70810758	LINE CORD 3P L=1.8
CABLE	73893234	SIGNAL CABLE MD15P-XH11P
*** APPEARANCE PARTS ***		
	2X319382	CABINET FRONT ASSY
	2X319401	CABINET BACK
	2X428441	REVOLVING STAND ASSY
	2X541791	COIL SPRING
	2X546041	CHASSIS BASE
*** PRINTED & PACKING MATERIALS ***		
	2X783891	NAME PLATE,INSTRUCTION
	2X783911	LABEL(CRA)(720ML)(CN505A)
	2X832321	FILLER(T)CARTON
	2X832331	FILLER(B)CARTON
	2X832351	CARTON BOX(CN505A)
	2X832891	SHEET,PROTECTION
	24813191	BAG,POLYETHYLENE(150*370)
	25822831	SHEET PROTECTION
MANUAL	78130503	USER'S MANUAL CN503A

SYMBOL	PARTS NO	DESCRIPTION
R747R R998	40AA3179	R,CHIP 1.8K 5% 1/10W
R341 R4EE R520	40AA3181	R,CHIP 2.2K 5% 1/10W
R7AC R7A9 R7E3		
R71R R992 R996		
R999		
R5HL R5H7 R74K	40AA3183	R,CHIP 2.7K 5% 1/10W
R972		
R5HH R5H9 R59G	40AA3185	R,CHIP 3.3K 5% 1/10W
R59W R791		
R4E4 R4E5 R59T	40AA3187	R,CHIP 3.9K 5% 1/10W
R71P R997		
R7A5	40AA3188	R,CHIP 4.3K 5% 1/10W
R71H	40AA3189	R,CHIP 4.7K 5% 1/10W
R5W1	40AA3190	R,CHIP 5.1K 5% 1/10W
R73H R739B R739G	40AA3193	R,CHIP 6.8K 5% 1/10W
R739R R772 R984		
R4E6 R5HN R73C	40AA3195	R,CHIP 8.2K 5% 1/10W
R4EA R40F R423	40AA3197	R,CHIP 10K 5% 1/10W
R424 R5HA R5HE		
R5HP R5W2 R528		
R551 R552 R59H		
R59X R647 R648		
R7AG R7A1 R7A2		
R7E2 R7E4 R71S		
R71W R711 R731		
R748B R748G R748R		
R751 R771 R8A6		
R876 R961 R973		
R59P R782	40AA3199	R,CHIP 12K 5% 1/10W
R523 R956 R991	40AA3201	R,CHIP 15K 5% 1/10W
R5HF R5HM R7E1	40AA3205	R,CHIP 22K 5% 1/10W
R59K R8A2 R959	40AA3207	R,CHIP 27K 5% 1/10W
R960		
R5W5 R599 R73E	40AA3209	R,CHIP 33K 5% 1/10W
R73F R875		
R73G	40AA3211	R,CHIP 39K 5% 1/10W
R7A8	40AA3212	R,CHIP 43K 5% 1/10W
R5W3 R5W4 R8A1	40AA3213	R,CHIP 47K 5% 1/10W
R968 R971		
R59L R59Y	40AA3215	R,CHIP 56K 5% 1/10W
R784	40AA3217	R,CHIP 68K 5% 1/10W

SYMBOL	PARTS NO	DESCRIPTION
*** RESISTORS ***		
R425	40AAD149	R,CHIP 100H 5% 1/2W
R717B R717G R717R	40AAD153	R,CHIP 150H 5% 1/2W
R721B R721G R721R		
R724B	40AA1149	R,CHIP 100H 5% 1/8W
R4EF R7A6 R7A7	40AA3000	R,CHIP 0.0H 5% 1/10W
R70A R71F R71G		
R793 R794 R795		
R582 R734	40AA3125	R,CHIP 10H 5% 1/10W
R619 R722B R722G	40AA3133	R,CHIP 22H 5% 1/10W
R722R		
R8A3 R8A4	40AA3141	R,CHIP 47H 5% 1/10W
R5HK R581 R712	40AA3149	R,CHIP 100H 5% 1/10W
R713 R724G R724R		
R73AB R73AG R73AR		
R732 R733 R752		
R753 R799		
R723B R723G R723R	40AA3153	R,CHIP 150H 5% 1/10W
R518 R746B R746G	40AA3157	R,CHIP 220H 5% 1/10W
R746R		
R871 R872	40AA3161	R,CHIP 330H 5% 1/10W
R716B R716G R716R	40AA3163	R,CHIP 390H 5% 1/10W
R724 R774 R775		
R522 R526 R71E	40AA3167	R,CHIP 560H 5% 1/10W
R781		
R718B R718G R718R	40AA3169	R,CHIP 680H 5% 1/10W
R74J		
R426 R428 R5HT	40AA3173	R,CHIP 1.0K 5% 1/10W
R501 R502 R503		
R504 R505 R506		
R507 R508 R509		
R514 R515 R521		
R527 R531 R532		
R634 R7AF R71V		
R719 R73K R773		
R790 R798 R8A5		
R8A7 R878		
R5H6 R525 R71K	40AA3175	R,CHIP 1.2K 5% 1/10W
R71M		
R956	40AA3177	R,CHIP 1.5K 5% 1/10W
R71A R747B R747G	40AA3179	R,CHIP 1.8K 5% 1/10W

SYMBOL	PARTS NO	DESCRIPTION
R7AH	40AA3218	R,CHIP 75K 5% 1/10W
R4E8 R5HG R59M	40AA3221	R,CHIP 100K 5% 1/10W
R877	40AA3229	R,CHIP 220K 5% 1/10W
R59U	40AA3233	R,CHIP 330K 5% 1/10W
R5H8 R5W6 R74AB	40AA3237	R,CHIP 470K 5% 1/10W
R74AG R74AR		
R4E7 R783	40AA3245	R,CHIP 1.0M 5% 1/10W
R873 R874	40AA3253	R,CHIP 2.2M 5% 1/10W
R42T R702B R702G	40AB3137	R,CHIP 33H 1% 1/10W
R702R		
R701B R701G R701R	40AB3146	R,CHIP 75H 1% 1/10W
R50A	40AB3172	R,CHIP 910H 1% 1/10W
R52E	40AB3173	R,CHIP 1.0K 1% 1/10W
R510 R957	40AB3175	R,CHIP 1.2K 1% 1/10W
R517	40AB3177	R,CHIP 1.5K 1% 1/10W
R40A R40E R51G	40AB3179	R,CHIP 1.8K 1% 1/10W
R969 R970	40AB3180	R,CHIP 2.0K 1% 1/10W
R524	40AB3181	R,CHIP 2.2K 1% 1/10W
R792	40AB3182	R,CHIP 2.4K 1% 1/10W
R714	40AB3183	R,CHIP 2.7K 1% 1/10W
R516	40AB3184	R,CHIP 3.0K 1% 1/10W
R422	40AB3185	R,CHIP 3.3K 1% 1/10W
R50E	40AB3188	R,CHIP 4.3K 1% 1/10W
R52A	40AB3191	R,CHIP 5.6K 1% 1/10W
R958 R982	40AB3193	R,CHIP 6.8K 1% 1/10W
R401 R403 R74EB	40AB3195	R,CHIP 8.2K 1% 1/10W
R74EG R74ER		
R402 R404 R421	40AB3197	R,CHIP 10K 1% 1/10W
R51A R51F R51H		
R519 R964		
R51K R981	40AB3199	R,CHIP 12K 1% 1/10W
R51E R715 R983	40AB3201	R,CHIP 15K 1% 1/10W
R738B R738G R738R	40AB3202	R,CHIP 16K 1% 1/10W
R735B R735G R735R	40AB3203	R,CHIP 18K 1% 1/10W
R736R R741B R741G	40AB3205	R,CHIP 22K 1% 1/10W
R741R R742B R742G		
R742R		
R736B R736G R965	40AB3208	R,CHIP 30K 1% 1/10W
R953	40AB3209	R,CHIP 33K 1% 1/10W
R737B R737G R737R	40AB3211	R,CHIP 39K 1% 1/10W

SYMBOL			PARTS NO	DESCRIPTION
R744B	R744G	R744R	40AB3211	R,CHIP 39K 1% 1/10W
R59A			40AB3213	R,CHIP 47K 1% 1/10W
R59F			40AB3215	R,CHIP 56K 1% 1/10W
R743B	R743G	R743R	40AB3224	R,CHIP 130K 1% 1/10W
R59E			40AB3225	R,CHIP 150K 1% 1/10W
R74FB	R74FG	R74FR	40AB3237	R,CHIP 470K 1% 1/10W
R745B	R745G	R745R		
R680			401CF639	R,CARBON 39H 5% 1/4W
R621	R631		401CF749	R,CARBON 1.5M 5% 1/4W
R55P	R988		401C6633	R,CARBON 22H 5% 1/4W
R680			401C6639	R,CARBON 39H 5% 1/4W
R561			401C6657	R,CARBON 220H 5% 1/4W
R656			401C6677	R,CARBON 1.5K 5% 1/4W
R906			401C6721	R,CARBON 100K 5% 1/4W
R621	R631		401C6749	R,CARBON 1.5M 5% 1/4W
△R2001	△R554		401G6109	R,CARBON 2.2H 5% 1/4W
R655	△R950		401G6125	R,CARBON 10H 5% 1/4W
△R5F2			401G6197	R,CARBON 10K 5% 1/4W
R905			401H5649	R,CARBON 100H 5% 1/2W
R618			401H5651	R,CARBON 120H 5% 1/2W
R990			401H5673	R,CARBON 1.0K 5% 1/2W
R411			401H6601	R,CARBON 1.0H 5% 1/2W
R901	R902	R903	401H6637	R,CARBON 33H 5% 1/2W
△R5R1			401H6647	R,CARBON 82H 5% 1/2W
R409			401H6665	R,CARBON 470H 5% 1/2W
R594			401H6697	R,CARBON 10K 5% 1/2W
△R5F3			401H6725	R,CARBON 150K 5% 1/2W
△R601			401H6737	R,CARBON 470K 5% 1/2W
R646			401H6745	R,CARBON 1.0M 5% 1/2W
R307	R308		401KE658	R,CARBON 240H 5% 1/6W
R563	R55L	R638	401K5625	R,CARBON 10H 5% 1/6W
R620	R904		401K5633	R,CARBON 22H 5% 1/6W
△R5C6	△R57G	△R57M	401K5649	R,CARBON 100H 5% 1/6W
△R579	R597	R635		
R639	R649			
R107			401K5655	R,CARBON 180H 5% 1/6W
R307	R308		401K5658	R,CARBON 240H 5% 1/6W
R342	R343		401K5659	R,CARBON 270H 5% 1/6W
R673			401K5661	R,CARBON 330H 5% 1/6W
R801	R802		401K5663	R,CARBON 390H 5% 1/6W

SYMBOL			PARTS NO	DESCRIPTION
R7F2			403T1143	R,METAL 56H 5% 1W
R749B	R749G	R749R	403T1207	R,METAL 27K 5% 1W
△R5F1			403T2101	R,METAL 1.0H 5% 2W
R583			403T2127	R,METAL 12H 5% 2W
R609			403T2149	R,METAL 100H 5% 2W
R571			403T2165	R,METAL 470H 5% 2W
R605	R606		403T2213	R,METAL 47K 5% 2W
R653	R654		403T2217	R,METAL 68K 5% 2W
R603	R604		403T3207	R,METAL 27K 5% 3W
R607			403T3329	R,METAL 0.22H 5% 3W
R55U			403T3333	R,METAL 0.33H 5% 3W
△R561			403T3502	R,METAL 1.2H 5% 3W
R110	R111		404CA670	R,METAL 750H 1% 1/6W
R640			404CA688	R,METAL 4.3K 1% 1/6W
R407			404CA692	R,METAL 6.2K 1% 1/6W
R309	R591		404CA743	R,METAL 820K 1% 1/6W
R110	R111		404C1670	R,METAL 750H 1% 1/6W
R675			404C1683	R,METAL 2.7K 1% 1/6W
△R2003			404C1687	R,METAL 3.9K 1% 1/6W
R640			404C1688	R,METAL 4.3K 1% 1/6W
△R2004	△R2009		404C1691	R,METAL 5.6K 1% 1/6W
R407			404C1692	R,METAL 6.2K 1% 1/6W
R593			404C1695	R,METAL 8.2K 1% 1/6W
R406			404C1697	R,METAL 10K 1% 1/6W
△R2002			404C1700	R,METAL 13K 1% 1/6W
R5U3			404C1703	R,METAL 18K 1% 1/6W
R592			404C1709	R,METAL 33K 1% 1/6W
△R5R3			404C1715	R,METAL 56K 1% 1/6W
R5U5	R674		404C1721	R,METAL 100K 1% 1/6W
R681			404C1723	R,METAL 120K 1% 1/6W
R5U2			404C1731	R,METAL 270K 1% 1/6W
R309	R591		404C1743	R,METAL 820K 1% 1/6W
R993	R994	R995	404K2731	R,METAL 270K 1% 1/4W
△R5H4			404K5133	R,METAL 22H 5% 1/4W
R661	R662		40499507	R,METAL 0.22H 5% 1/2W
△R989			409A6177	R,FUSE 1.5K 5% 1/4W

SYMBOL			PARTS NO	DESCRIPTION
R5R2			401K5665	R,CARBON 470H 5% 1/6W
R657	R658	R671	401K5669	R,CARBON 680H 5% 1/6W
R108	R109	R311	401K5673	R,CARBON 1.0K 5% 1/6W
R312	R5H3	R5R6		
R636	R645	R807		
R840				
R633			401K5677	R,CARBON 1.5K 5% 1/6W
R595	R844		401K5679	R,CARBON 1.8K 5% 1/6W
R596	R641		401K5681	R,CARBON 2.2K 5% 1/6W
R803	R804		401K5683	R,CARBON 2.7K 5% 1/6W
R643			401K5685	R,CARBON 3.3K 5% 1/6W
R57L	R637	R672	401K5689	R,CARBON 4.7K 5% 1/6W
R677				
R408			401K5693	R,CARBON 6.8K 5% 1/6W
R361	R5C8	R5C9	401K5697	R,CARBON 10K 5% 1/6W
R5G2	R57F	R57P		
R57T	R57U	R57W		
R622	R624	R627		
R629	R630	R642		
R808	R832	R833		
R834	R835	R841		
R846				
△R200E	R628		401K5701	R,CARBON 15K 5% 1/6W
R678	R828		401K5705	R,CARBON 22K 5% 1/6W
△R200F	R625	R626	401K5707	R,CARBON 27K 5% 1/6W
R304	R306		401K5709	R,CARBON 33K 5% 1/6W
R2005			401K5711	R,CARBON 39K 5% 1/6W
R301	R302	R623	401K5713	R,CARBON 47K 5% 1/6W
R632			401K5715	R,CARBON 56K 5% 1/6W
R644			401K5717	R,CARBON 68K 5% 1/6W
R5C7	R5H1	R57A	401K5721	R,CARBON 100K 5% 1/6W
R57H	R57N	R608		
R303	R305		401K5739	R,CARBON 560K 5% 1/6W
△R5CA	△R5C2	△R5C3	401K5743	R,CARBON 820K 5% 1/6W
△R5C4				
R55N			40216224	R,WIRE 0.75H 5% 5W
△R562			40224275	R,WIRE 1.2K 5% 7W
R985	R986	R987	403F1217	R,METAL OXIED 68K 5% 1W
R410			40371101	R,METAL 1.0H 5% 1W
R7F1			40371109	R,METAL 2.2H 5% 1W

SYMBOL			PARTS NO	DESCRIPTION
	*** CAPACITORS ***			
C4E6	C526		42AA1509	C,CHIP CERAMIC 50V 1000PF
C956			42AA1513	C,CHIP CERAMIC 50V 2200PF
C595			42AA1516	C,CHIP CERAMIC 50V 3900PF
C402	C792		42AA1517	C,CHIP CERAMIC 50V 4700PF
C636			42AA1521	C,CHIP CERAMIC 50V 0.01UF
C743B	C743G	C743R	42AA1527	C,CERAMIC 25V 0.01UF
C626	C7AF	C732	42AA1538	C,CERAMIC 25V 0.1UF
C752	C76A	C76E		
C76F	C765	C766		
C767	C791			
C423	C5HF	C5HG	42AA2725	C,CERAMIC 50V 0.01UF
C5H8	C71A	C721		
C76H	C782	C951		
C957	C959			
C421	C422	C424	42AA2744	C,CERAMIC 25V 0.1UF
C50P	C50T	C501		
C502	C503	C504		
C505	C508	C509		
C510	C511	C514		
C516	C518	C521		
C524	C530	C531		
C532	C599	C7AA		
C7E1	C711	C712		
C713B	C713G	C713R		
C714	C715B	C715G		
C715R	C731	C751		
C76G	C763B	C763G		
C763R	C79G	C798		
C8A2	C953	C954		
C960	C981			
C51A			42AA2746	C,CERAMIC 25V 0.22UF
C5HH			42CA1426	C,CERAMIC 50V 27PF
C5H9	C725R		42CA1428	C,CERAMIC 50V 33PF
C723B	C723G	C723R	42CA1432	C,CERAMIC 50V 47PF
C725B	C725G			
C716			42CA1434	C,CERAMIC 50V 56PF
C7A9	C871	C874	42CA1440	C,CERAMIC 50V 100PF
C76J			42CA1450	C,CERAMIC 50V 270PF
C517			42CA1456	C,CERAMIC 50V 470PF
C5H6			42CA1464	C,CERAMIC 50V 1000PF

SYMBOL			PARTS NO	DESCRIPTION
C7AH			42CA7440	C,CERAMIC 50V 100PF
C958			42CA7446	C,CERAMIC 50V 180PF
C7A3			42CA7448	C,CERAMIC 50V 220PF
C4E2	C79A		42CA7456	C,CERAMIC 50V 470PF
C901			42DC9551	C,CERAMIC 500V 100PF
C591			42DC9555	C,CERAMIC 500V 220PF
⚠C5R1	C902		42DC9563	C,CERAMIC 500V 1000PF
C571			42DC9567	C,CERAMIC 500V 2200PF
C769			42DC9569	C,CERAMIC 500V 3300PF
C558			42DC9571	C,CERAMIC 500V 4700PF
C903			42DDK108	C,CERAMIC 2KV 10000PF
C904	C905		42DD0019	C,CERAMIC 2KV 1000PF
⚠C602	⚠C603		42DEC013	C,CERAMIC 400V 1000P
⚠C607	⚠C608		42DEC067	C,CERAMIC 250V 2200PF
C611			42DJJ088	C,CERAMIC 2K 220PF
C659	C569		42DJ8061	C,CERAMIC 560PF 1KV10%-AT
C343	C403	C405	421A0425	C,CERAMIC 50V 0.01UF
C808	C840		421CA005	C,CERAMIC 50V 220PF
C804	C805		421CB029	C,CERAMIC 50V 47PF
C808	C840		421C1005	C,CERAMIC 50V 220PF
C804	C805		421C2029	C,CERAMIC 50V 47PF
C5U1	C57F	C57G	421D6009	C,CERAMIC 25V 0.1UF
C577	C579	C801		
C803				
C817	C818		423A2015	C,CERAMIC 50V 10PF
C326	C629	C631	427F4601	C,FILM 50V 1000PF
C598			427F4602	C,FILM 50V 1200PF
C323			427F4605	C,FILM 50V 2200PF
C625	C632	C635	427F4613	C,FILM 50V 0.01UF
C324	C325	C630	427F4617	C,FILM 50V 0.022UF
C5W3			427F4620	C,FILM 50V 0.039UF
C59A			427F4622	C,FILM 50V 0.056UF
C327			427F4624	C,FILM 50V 0.082UF
C304	C306	C312	427F4625	C,FILM 50V 0.1UF
C318	C319	C322		
C329	C427	C624		
C628	C633	C671		
C520			427F4651	C,FILM 50V 1000PF
C303	C305		427F4661	C,FILM 50V 6800PF
C5W1			427F4663	C,FILM 50V 0.01UF

SYMBOL			PARTS NO	DESCRIPTION
C519	C872	C873	430B6062	C,ELEC 50V 2.2UF
C705			430B6063	C,ELEC 50V 3.3UF
C309	C310	C597	430B6064	C,ELEC 50V 4.7UF
C7AE	C7A7	C771		
⚠C2001	C4E4	C7A8	430B6065	C,ELEC 50V 10UF
C701B	C701G	C701R		
C824	C875			
C5HA			430B6069	C,ELEC 50V 100UF
C758			430B6101	C,ELEC 100V 47UF
C744B	C744G	C744R	430B6552	C,ELEC 250V 1.0UF
C342			430B8142	C,ELEC 16V 22UF
C341			430B8176	C,ELEC 50V 2.2UF
⚠C5F1			430B9015	C,ELEC 10V 47UF
C668			430B9016	C,ELEC 10V 100UF
C667			430B9019	C,ELEC 10V 470UF
C722	C752		430B9030	C,ELEC 16V 220UF
C664			430B9032	C,ELEC 16V 470UF
C663			430B9033	C,ELEC 16V 1000UF
C622	C623		430B9038	C,ELEC 25V 10UF
C781			430B9041	C,ELEC 25V 47UF
C627			430B9042	C,ELEC 25V 100UF
C666			430B9043	C,ELEC 25V 220UF
C554	C662		430B9045	C,ELEC 25V 470UF
C404	C406		430B9056	C,ELEC 35V 330UF
C621	C634		430B9062	C,ELEC 50V 2.2UF
C612	C746		430B9065	C,ELEC 50V 10UF
C407			430B9070	C,ELEC 50V 220UF
C783			430B9094	C,ELEC 100V 1.0UF
C5H1			430B9552	C,ELEC 250V 1.0UF
C745			430B9556	C,ELEC 250V 10UF
C5G1			430CH358	C,ELEC 250V 47UF
⚠C2005			430C0039	C,ELEC 10V 220UF
C529			430C0048	C,ELEC 16V 100UF
C512			430C0054	C,ELEC 25V 10UF
C5HK	C5H3	C507	430C0058	C,ELEC 25V 47UF
C533				
C764			430C8423	C,ELEC 16V 470UF
C52A			4302F061	C,ELEC 50V 1.0UF
C660	C661	C665	4302J046	C,ELEC 25V 1000UF
C658			4302J102	C,ELEC 100V 100UF

SYMBOL			PARTS NO	DESCRIPTION
C955			427F4669	C,FILM 50V 0.033UF
C7A6	C741B	C741G	427F4673	C,FILM 50V 0.068UF
C741R				
C523			427F4675	C,FILM 50V 0.1UF
C328			427F4695	C093M1H681J,BT
C506			428B3019	C,METAL FILM 50V 0.33UF
C408			428B3021	C,METAL FILM 50V 0.47UF
C5HE			428B3025	C,METAL FILM 50V 1.0UF
C5G2			428CJ022	C,METAL FILM 250V 0.1UF
C4E3			428D0053	C,METAL 100V 0.1UF
C673	C742B	C742G	428D0093	C,METALFILM 250V 0.1UF
C742R				
C610			428D0165	C,FILM 400V 0.022UF
⚠C563			42816018	C,FILM 100V 3.9UF J
⚠C57E			42816352	C,FILM 250V 0.12UF 5%
⚠C576			42816353	C,FILM 250V 0.15UF 5%
⚠C573			42816361	C,FILM 250V 0.47UF 5%
⚠C578			42816363	C,FILM 250V 0.68UF 5%
⚠C561			42818005	C,METAL 2.0KV 5200PF
⚠C562			42818222	C,METAL FILM1.6KV 7500PF
⚠C601	⚠C604	C613	42824857	C,FILM 250V 0.1UF
C724B	C724G	C724R	42844417	C,METAL FILM 250V 0.22UF
C950			42899115	C,METAL 1000V 0.047UF
⚠C57A			42899172	C,FILM 400V 0.36UF
⚠C5R2			430A4031	C,ELEC 16V 10UF
C761			43086015	C,ELEC 10V 47UF
C582	C79E		43086017	C,ELEC 10V 220UF
C313	C314	C317	43086029	C,ELEC 16V 100UF
C320	C330	C525		
C528	C825			
C311	C315	C316	43086030	C,ELEC 16V 220UF
C331	C802		43086032	C,ELEC 16V 470UF
C332			43086033	C,ELEC 16V 1000UF
C307	C308		43086039	C,ELEC 25V 22UF
C33A	C33C	C425	43086041	C,ELEC 25V 47UF
C426	C551	C77F		
C361			43086042	C,ELEC 25V 100UF
C952			43086043	C,ELEC 25V 220UF
C793			43086061	C,ELEC 50V 1.0UF
C301	C302	C515	43086062	C,ELEC 50V 2.2UF

SYMBOL			PARTS NO	DESCRIPTION
C557			4302J103	C,ELEC 100V 220UF
C654			4302J559	C,ELEC 250V 47UF
C653			4302J560	C,ELEC 250V 100UF
C5G3			4309J171	C,ELEC 200V 33UF
⚠C609			43109530	C,ELEC 200V 680UF
C522			433A4025	C,ELEC 16V 47UF
C596			433A4055	C,ELEC 50V 1.0UF
C983			433A4056	C,ELEC 50V 2.2UF
C982			433A4058	C,ELEC 50V 4.7UF
C581			433A7014	C,ELEC 16V 100UF

REPLACEMENT PARTS LIST

The components specified for Model JC-1735VMB

Note: The components identified by ⚠ make are critical for safety.
Replace only with parts Number specified.

SYMBOL	PARTS NO	DESCRIPTION
*** CRT & TUNER ***		
⚠CRT	33017552	CRT M41LJC101XX20(UF)
*** ICS ***		
IC671	370A1009	IC UPC1093J-T (REG)
IC952	370KE011	IC LM4040C1M3-4.1(X)
IC302	37001117	IC BA5415A (AMP)
IC361	37005193	IC PQ12RF11 (REG)
IC503	37005221	IC UPC78M09AHF
IC331	37005270	IC UPC2412AHF
IC803	37005277	IC PQ05RR13 (REG)
IC401	37006019	IC TEA8172
IC501	37009034	IC UPC1883CT
IC501	37009035	IC UPC1883CT(MS)
IC420	37011307	IC LA6501MA (OP AMP)
IC301	37011326	IC UPC1853CT-01
⚠IC951	37011333	IC UPC5022CT-096 (100MV)
IC711	37011346	IC LM1282N(VIDEO PRE AMP)
IC7E1	37053198	MOS HD74HC08P
IC802	37055537	MOS NM24C04EN
IC502	37056115	IC UPC4741C
⚠IC5H1	37056615	IC BA10393
IC5H2	37056616	IC BA10358
IC591 IC732 IC741	37056926	IC BA10324A (Q OP-AMP)
IC8A1	37074324	MOS 24LC21-1/P (E-EPROM)
IC621	37076081	IC UC3842N
IC531 IC532 IC731	37076176	MOS M62393P
IC751		
IC791	37076298	MOS M35043-052SP
IC7A1	37076304	IC M52347SP
IC721	37076309	IC VP513
IC801	37076329	MOS UPD78014FYCW-W07
*** TRANSISTORS ***		
Q5R1 Q623 Q624	350D7216	TR 2SC945-T P
Q626 Q628 Q630		
Q632 Q671 Q672		
⚠Q2006 Q5H9 Q552	350D7217	TR 2SC945-T Q
Q629	350F4211	TR 2SD571-T K

SYMBOL	PARTS NO	DESCRIPTION
ZD626	360K3692	DIODE RD20ESB(3)-T4
ZD2003	360K3699	DIODE RD24ES AB1-T4
ZD628	360K3711	DIODE RD30ESB(3)/ESAB(3)
D621 D622	361KG523	DIODE ERA15-04
D602	361K7174	DIODE RU1P V1
D950	361K7312	DIODE EP01C-V
D621 D622	361K7523	DIODE ERA15-04V1
⚠D2001	361K7562	DIODE EGP10G G23
D603 D629 D633	361K7570	DIODE DINL20
D656		
D57A D57H D576	361K7754	DI 1SR139-600 T31
D578		
D552	36107293	DIODE RK14
D654 D655	36107352	DIODE RL2Z-LFC4
D651	36107512	DIODE RG4C,LFK2
D5G3 D553	36107518	DIODE RG2
D652	36107694	DIODE RG4A(LF-K2)
⚠D561	36107716	DIODE FMP-3FU
D653	36107729	DIODE YG901C2
⚠D562	36107764	DIODE ERD09-15J9
⚠D601	36108201	DIODE,NETWORK D5SBA60S
LED101	36801021	LED SML19416W-LF38
LED601	36801397	LED SEL1915CAM-LF58(C,D)
D401 D5H1	369K2136	DIODE RGP10G,AT
⚠TH602	38102070	THERMISTOR SCK-105L
⚠TH601	38112058	THERMISTOR,POSITIVE
⚠PC601 ⚠PC602 ⚠PC603	38200354	PHOTOCOUPLER PC123FY2
*** TRANSFORMERS ***		
⚠T551	45804021	TRANS,H.DRAIVE
L5G3	46206014	COIL,CHOKE 4MH
⚠T601	46309810	SWITCHING TRANS(46309810)
⚠T5R1	47105706	FBT
*** VARIABLE RESISTORS ***		
VR952	410G1313	R.VARIABLE B10K
VR581 VR951	410G1407	R.VARIABLE B1K
⚠VR5R1	415K5162	R.VARIABLE 100K
VR671	41505103	R.VARIABLE B500

SYMBOL	PARTS NO	DESCRIPTION
Q581 Q7F1	350G1018	TR 2SD2005-T105 R
Q781	350H4418	TR,2SC1473-TA R
Q101 Q102 ⚠Q2007	350K3517	TR 2SA733/2SA733A-T Q
Q5HA Q553 Q592		
Q625 Q627		
⚠Q5F1	35011500	TR 2SA1767
Q591	35071506	TR 2SD1957 F
Q741B Q741G Q741R	35084417	TR,2SC1473 Q
Q982 Q983	35094940	TR 2SC4632LS
⚠Q561	35095220	TR 2SC5302
Q361 Q57A Q576	351G0531	TR AA1L4M-T
Q577		
Q2001	351G0561	TR DTA144ES-T
Q5T1	351G0602	TR DTC144ES-T
Q103 Q104	351G0641	TR DTC114YS-T
⚠Q573 ⚠Q579	35127300	TR 2SK947-M
⚠Q601	35127412	TR 2SK2147-01R
Q5G1	35127470	TR 2SJ306
Q555	35127630	TR 2SK1904
⚠Q57F ⚠Q574	35127890	TR 2SK2518-01MR
Q621 Q622	355D2715	TR BA1A4M
*** DIODES ***		
ZD624	360KC117	DIODE RD39EB(4)-T1
ZD601	360KC186	DIODE RD22E B1-T1
ZD341	360KC671	DIODE RD12ESB(2)/ESA8(2)
⚠D2002 D301 D5G1	360K1027	DIODE 1SS132
D5G2 D605 D624		
D525 D627 D628		
D630 D631 D632		
D634 D658		
ZD621 ZD625	360K3098	DIODE RD12EB(3)-T4
ZD624	360K3117	DIODE RD39EB(4)-T4
ZD601	360K3186	DIODE RD22EB(1)-T4
ZD623	360K3602	DIODE RD2.0ESB(1)-T4
ZD5E1 ZD629	360K3643	DIODE RD6.2ES AB2-T4
ZD7F1	360K3647	DIODE RD6.8ESB(2)-T4
⚠ZD2001	360K3652	DIODE RD7.5ESB(3)-T4
ZD341	360K3671	DIODE RD12ES AB2-T4
ZD2002	360K3675	DIODE RD13ESB(2)-T4

SYMBOL	PARTS NO	DESCRIPTION
*** RELAYS & SWITCHES ***		
SW581	65161081	SWITCH SLIDE 00220867
S101 S102 S105	653F0067	TACT SWITCH PC0 05K
S106 S107		
S103	65360047	TACT SWITCH KSM0642A
⚠SW501	65360060	PUSH SWITCH ESB91631AXL
⚠RL601	65660038	RELAY SDT-SS-112DM
*** COILS & FILTERS ***		
LC7A1 LC7A2 LC711	390J9027	FILTER ZJSC-R12-100TA
LC791 LC792B LC792G		
LC792R		
MRC801 MRC802	39040002	RC,NETWORK 10K 1K 0.01UF
MRC803	39040003	RC,NETWORK 1K 0.01UF
⚠L562	60906064	COIL,WIDTH(80UH)
⚠L571	60919166	COIL,H.LIN 15T
L79	610E1711	COIL,FILTER 3.3UH
L721	610E1727	COIL,FILTER 68UH
L602	610E1737	COIL,FILTER 470UH
⚠L561	610F3014	COIL,FILTER 3.3UH
L361 L5G1	610F3025	COIL,FILTER 47UH
L657 L658 L659	610F5002	FERRITE BEADS (B-02-RT)
L660 L661		
L901 L902 L903	610F8036	COIL,FILTER 0.39UH
L601	610G0111	INDUCTOR,BEADS(FBR07HA121
L652 L654 L655	610G0257	COIL,CHOKE 33UH
L651 L656	610G0262	COIL,CHOKE PJ85-101K
L551	610J9125	COIL,FILTER 220K LHL10TB
L301	610J9128	FILTER COIL 102J LHL10TB
⚠L5R1	610J9130	FILTER COIL SPT0406A100K
⚠FL602	61062209	LINE FILTER (HR-28-E702)
⚠FL601	61062216	LINE FILTER (SS24V-15045)
L581	61070257	COIL,CHOKE 8MH (K)
L653	61099107	FILTER CHOKE 33UH 2.0A
⚠DEG	61317209	DEGAUSSING COIL (15.8H 80
LC721	616K6027	NOISE FILTER 2A222-TA
LC742 LC743 LC771	616K6028	NOISE FILTER 1H223X-TA
LC8A1 LC901		
LC7018 LC701G LC701R	616K6827	NOISE FILTER
LC741	616K6966	NOISE FILTER

SYMBOL	PARTS NO	DESCRIPTION
D5G3	61605135	FERRITE CORE
*** PWB ASSYS ***		
	84R36C01	VIDEO PWB ASSY
	84R37F01	MAIN PWB ASSY
*** ELECTRICAL PARTS & MISCELLANEOUS PARTS ***		
SG901 SG902 SG903 SG904	329J0047	ARRESTER (300V),AT52
CN-GND	32990205	INSULATING CAP TIC-3.5(
SP	63010602	SPEAKER 90*50MM 16H 2W PH
X801	64098039	X'TAL(10.000MHZ)
F601	66699064	FUSE UL(ET) 250V 4A
△F601	66699065	FUSE S506 - 250V - 4A
SG905	667K6007	SPARK GAP 1.5KV
CN-CRT	70032063	CRT SCCKET CVT3256-0175
JK301	70505059	EARPHONE JACK
JK302 JK303	70505082	JACK,HEADPHONE YKB21-5130
△IN601	70521064	AC RECEPTACLE
CORD	70800071	LINE CORD 3P E
CABLE	73893234	SIGNAL CABLE MD15P-XH11P
*** APPEARANCE PARTS ***		
	2X319382	CABINET FRONT ASSY
	2X319401	CABINET BACK
	2X428441	REVOLVING STAND ASSY
	2X541791	COIL SPRING
	2X546041	CHASSIS BASE
	25757643	LABEL(REV.)
*** PRINTED & PACKING MATERIALS ***		
	2X783921	NAME PLATE,INSTRUCTION
	2X832321	FILLER(T)CARTON
	2X832331	FILLER(B)CARTON
	2X832361	CARTON BOX(CN505B)
	2X832891	SHEET,PROTECTION
	24813191	BAG,POLYETHYLENE(150*370)
	25829111	SHEET PROTECTION
	78130513	USER'S MANUAL CN503/5B,R

SYMBOL	PARTS NO	DESCRIPTION
R747R R998	40AA3179	R,CHIP 1.8K 5% 1/10W
R341 R4EE R520	40AA3181	R,CHIP 2.2K 5% 1/10W
R7AC R7A9 R7E3		
R71R R992 R996		
R999		
R5HL R5H7 R74K	40AA3183	R,CHIP 2.7K 5% 1/10W
R972		
R5HH R5H9 R59G	40AA3185	R,CHIP 3.3K 5% 1/10W
R59W R791		
R4E4 R4E5 R59T	40AA3187	R,CHIP 3.9K 5% 1/10W
R71P R997		
R7A5	40AA3188	R,CHIP 4.3K 5% 1/10W
R71H	40AA3189	R,CHIP 4.7K 5% 1/10W
R5W1	40AA3190	R,CHIP 5.1K 5% 1/10W
R73H R739B R739G	40AA3193	R,CHIP 6.8K 5% 1/10W
R739R R772 R984		
R4E6 R5HN R73C	40AA3195	R,CHIP 8.2K 5% 1/10W
R4EA R40F R423	40AA3197	R,CHIP 10K 5% 1/10W
R424 R5HA R5HE		
R5HP R5W2 R528		
R551 R552 R59H		
R59X R647 R648		
R7AG R7A1 R7A2		
R7E2 R7E4 R71S		
R71W R711 R731		
R748B R748G R748R		
R751 R771 R8A6		
R876 R961 R973		
R59P R782	40AA3199	R,CHIP 12K 5% 1/10W
R523 R956 R991	40AA3201	R,CHIP 15K 5% 1/10W
R5HF R5HM R7E1	40AA3205	R,CHIP 22K 5% 1/10W
R59K R8A2 R959	40AA3207	R,CHIP 27K 5% 1/10W
R960		
R5W5 R599 R73E	40AA3209	R,CHIP 33K 5% 1/10W
R73F R875		
R73G	40AA3211	R,CHIP 39K 5% 1/10W
R7A8	40AA3212	R,CHIP 43K 5% 1/10W
R5W3 R5W4 R8A1	40AA3213	R,CHIP 47K 5% 1/10W
R968 R971		
R59L R59Y	40AA3215	R,CHIP 56K 5% 1/10W
R784	40AA3217	R,CHIP 68K 5% 1/10W

SYMBOL	PARTS NO	DESCRIPTION
*** RESISTORS ***		
R425	40AA0149	R,CHIP 100H 5% 1/2W
R717B R717G R717R	40AA0153	R,CHIP 150H 5% 1/2W
R721B R721G R721R		
R724B	40AA1149	R,CHIP 100H 5% 1/8W
R4EF R7A6 R7A7	40AA3000	R,CHIP 0.0H 5% 1/10W
R70A R71F R71G		
R793 R794 R795		
R582 R734	40AA3125	R,CHIP 10H 5% 1/10W
R519 R722B R722G	40AA3133	R,CHIP 22H 5% 1/10W
R722R		
R8A3 R8A4	40AA3141	R,CHIP 47H 5% 1/10W
R5HK R581 R712	40AA3149	R,CHIP 100H 5% 1/10W
R713 R724G R724R		
R73AB R73AG R73AR		
R732 R733 R752		
R753 R799		
R723B R723G R723R	40AA3153	R,CHIP 150H 5% 1/10W
R518 R746B R746G	40AA3157	R,CHIP 220H 5% 1/10W
R746R		
R871 R872	40AA3151	R,CHIP 330H 5% 1/10W
R716B R716G R716R	40AA3163	R,CHIP 390H 5% 1/10W
R724 R774 R775		
R532 R526 R71E	40AA3167	R,CHIP 560H 5% 1/10W
R781		
R718B R718G R718R	40AA3169	R,CHIP 680H 5% 1/10W
R74J		
R426 R428 R5HT	40AA3173	R,CHIP 1.0K 5% 1/10W
R501 R502 R503		
R504 R505 R506		
R507 R508 R509		
R514 R515 R521		
R527 R531 R532		
R634 R7AF R71V		
R719 R73K R773		
R790 R798 R8A5		
R8A7 R878		
R5H6 R525 R71K	40AA3175	R,CHIP 1.2K 5% 1/10W
R71M		
R966	40AA3177	R,CHIP 1.5K 5% 1/10W
R71A R747B R747G	40AA3179	R,CHIP 1.8K 5% 1/10W

SYMBOL	PARTS NO	DESCRIPTION
R7AH	40AA3218	R,CHIP 75K 5% 1/10W
R4E8 R5HG R59M	40AA3221	R,CHIP 100K 5% 1/10W
R877	40AA3229	R,CHIP 220K 5% 1/10W
R59U	40AA3233	R,CHIP 330K 5% 1/10W
R5H8 R5W6 R74A8	40AA3237	R,CHIP 470K 5% 1/10W
R74AG R74AR		
R4E7 R783	40AA3245	R,CHIP 1.0M 5% 1/10W
R873 R874	40AA3253	R,CHIP 2.2M 5% 1/10W
R427 R702B R702G	40AB3137	R,CHIP 33H 1% 1/10W
R702R		
R701B R701G R701R	40AB3146	R,CHIP 75H 1% 1/10W
R50A	40AB3172	R,CHIP 910H 1% 1/10W
R52E	40AB3173	R,CHIP 1.0K 1% 1/10W
R510 R957	40AB3175	R,CHIP 1.2K 1% 1/10W
R517	40AB3177	R,CHIP 1.5K 1% 1/10W
R40A R40E R51G	40AB3179	R,CHIP 1.8K 1% 1/10W
R969 R970	40AB3180	R,CHIP 2.0K 1% 1/10W
R524	40AB3181	R,CHIP 2.2K 1% 1/10W
R792	40AB3182	R,CHIP 2.4K 1% 1/10W
R714	40AB3183	R,CHIP 2.7K 1% 1/10W
R516	40AB3184	R,CHIP 3.0K 1% 1/10W
R422	40AB3185	R,CHIP 3.3K 1% 1/10W
R50E	40AB3188	R,CHIP 4.3K 1% 1/10W
R52A	40AB3191	R,CHIP 5.6K 1% 1/10W
R958 R982	40AB3193	R,CHIP 6.8K 1% 1/10W
R401 R403 R74EB	40AB3195	R,CHIP 8.2K 1% 1/10W
R74EG R74ER		
R402 R404 R421	40AB3197	R,CHIP 10K 1% 1/10W
R51A R51F R51H		
R519 R964		
R51K R981	40AB3199	R,CHIP 12K 1% 1/10W
R51E R715 R983	40AB3201	R,CHIP 15K 1% 1/10W
R738B R738G R738R	40AB3202	R,CHIP 16K 1% 1/10W
R735B R735G R735R	40AB3203	R,CHIP 18K 1% 1/10W
R736R R741B R741G	40AB3205	R,CHIP 22K 1% 1/10W
R741R R742B R742G		
R742R		
R736B R736G R965	40AB3208	R,CHIP 30K 1% 1/10W
R953	40AB3209	R,CHIP 33K 1% 1/10W
R737B R737G R737R	40AB3211	R,CHIP 39K 1% 1/10W

SYMBOL			PARTS NO	DESCRIPTION
R744B	R744G	R744R	40AB3211	R,CHIP 39K 1% 1/10W
R59A			40AB3213	R,CHIP 47K 1% 1/10W
R59F			40AB3215	R,CHIP 56K 1% 1/10W
R743B	R743G	R743R	40AB3224	R,CHIP 130K 1% 1/10W
R59E			40AB3225	R,CHIP 150K 1% 1/10W
R74FB	R74FG	R74FR	40AB3237	R,CHIP 470K 1% 1/10W
R745B	R745G	R745R		
R680			401CF639	R,CARBON 39H 5% 1/4W
R621	R631		401CF749	R,CARBON 1.5M 5% 1/4W
R55P	R988		401C6633	R,CARBON 22H 5% 1/4W
R680			401C6639	R,CARBON 39H 5% 1/4W
R5G1			401C6657	R,CARBON 220H 5% 1/4W
R656			401C6677	R,CARBON 1.5K 5% 1/4W
R906			401C6721	R,CARBON 100K 5% 1/4W
R621	R631		401C6749	R,CARBON 1.5M 5% 1/4W
△R2001	△R554		401G6109	R,CARBON 2.2H 5% 1/4W
R655	△R950		401G6125	R,CARBON 10H 5% 1/4W
△R5F2			401G6197	R,CARBON 10K 5% 1/4W
R905			401H5649	R,CARBON 100H 5% 1/2W
R618			401H5651	R,CARBON 120H 5% 1/2W
R990			401H5673	R,CARBON 1.0K 5% 1/2W
R411			401H6601	R,CARBON 1.0H 5% 1/2W
R901	R902	R903	401H6637	R,CARBON 33H 5% 1/2W
△R5R1			401H6647	R,CARBON 82H 5% 1/2W
R409			401H6665	R,CARBON 470H 5% 1/2W
R594			401H6697	R,CARBON 10K 5% 1/2W
△R5F3			401H6725	R,CARBON 150K 5% 1/2W
△R601			401H6737	R,CARBON 470K 5% 1/2W
R646			401H6745	R,CARBON 1.0M 5% 1/2W
R307	R308		401KE658	R,CARBON 240H 5% 1/6W
R5G3	R55L	R638	401K5625	R,CARBON 10H 5% 1/6W
R620	R904		401K5633	R,CARBON 22H 5% 1/6W
△R5C6	△R57G	△R57M	401K5649	R,CARBON 100H 5% 1/6W
△R579	R597	R635		
R639	R649			
R107			401K5655	R,CARBON 180H 5% 1/6W
R307	R308		401K5658	R,CARBON 240H 5% 1/6W
R342	R343		401K5659	R,CARBON 270H 5% 1/6W
R673			401K5661	R,CARBON 330H 5% 1/6W
R801	R802		401K5663	R,CARBON 390H 5% 1/6W

SYMBOL			PARTS NO	DESCRIPTION
R749B	R749G	R749R	40371207	R,METAL 27K 5% 1W
△R5F1			40372101	R,METAL 1.0H 5% 2W
R583			40372127	R,METAL 12H 5% 2W
R571			40372165	R,METAL 470H 5% 2W
R605	R606		40372213	R,METAL 47K 5% 2W
R653	R654		40372217	R,METAL 68K 5% 2W
R609			40373159	R,METAL 270H 5% 3W
R603	R604		40373215	R,METAL 56K 5% 3W
R55U			40373333	R,METAL 0.33H 5% 3W
R607			40373337	R,METAL 0.47H 5% 3W
△R561			40383502	R,METAL 1.2H 5% 3W
R110	R111		404CA670	R,METAL 750H 1% 1/6W
R407			404CA692	R,METAL 6.2K 1% 1/6W
R309	R591		404CA743	R,METAL 820K 1% 1/6W
R110	R111		404C1670	R,METAL 750H 1% 1/6W
R675			404C1683	R,METAL 2.7K 1% 1/6W
△R2003	R640		404C1687	R,METAL 3.9K 1% 1/6W
△R2004	△R2009		404C1691	R,METAL 5.6K 1% 1/6W
R407			404C1692	R,METAL 6.2K 1% 1/6W
R593			404C1695	R,METAL 8.2K 1% 1/6W
R406			404C1697	R,METAL 10K 1% 1/6W
△R2002			404C1700	R,METAL 13K 1% 1/6W
R5U3			404C1703	R,METAL 18K 1% 1/6W
R592			404C1709	R,METAL 33K 1% 1/6W
△R5R3			404C1715	R,METAL 56K 1% 1/6W
R5U5	R674		404C1721	R,METAL 100K 1% 1/6W
R681			404C1723	R,METAL 120K 1% 1/6W
R5U2			404C1731	R,METAL 270K 1% 1/6W
R309	R591		404C1743	R,METAL 820K 1% 1/6W
R993	R994	R995	404K2731	R,METAL 270K 1% 1/4W
△R5H4			404K5133	R,METAL 22H 5% 1/4W
R661	R662		40499507	R,METAL 0.22H 5% 1/2W
△R989			409A6177	R,FUSE 1.5K 5% 1/4W

*** CAPACITORS ***

C4E6	C526		42AA1509	C,CHIP CERAMIC 50V 1000PF
C956			42AA1513	C,CHIP CERAMIC 50V 2200PF
C595			42AA1516	C,CHIP CERAMIC 50V 3900PF
C402	C792		42AA1517	C,CHIP CERAMIC 50V 4700PF
C636			42AA1521	C,CHIP CERAMIC 50V 0.01UF

SYMBOL			PARTS NO	DESCRIPTION
R5R2			401K5665	R,CARBON 470H 5% 1/6W
R657	R658	R671	401K5669	R,CARBON 680H 5% 1/6W
R108	R109	R311	401K5673	R,CARBON 1.0K 5% 1/6W
R312	R5H3	R5R6		
R636	R637	R645		
R807	R840			
R633	R641		401K5677	R,CARBON 1.5K 5% 1/6W
R595	R844		401K5679	R,CARBON 1.8K 5% 1/6W
R596			401K5681	R,CARBON 2.2K 5% 1/6W
R803	R804		401K5683	R,CARBON 2.7K 5% 1/6W
R643			401K5685	R,CARBON 3.3K 5% 1/6W
R57L	R672	R677	401K5689	R,CARBON 4.7K 5% 1/6W
R408			401K5693	R,CARBON 6.8K 5% 1/6W
R361	R5C8	R5C9	401K5697	R,CARBON 10K 5% 1/6W
R5G2	R57F	R57P		
R57T	R57U	R57W		
R622	R624	R627		
R629	R630	R642		
R808	R832	R833		
R834	R835	R841		
R846				
△R200E	R528		401K5701	R,CARBON 15K 5% 1/6W
R678	R828		401K5705	R,CARBON 22K 5% 1/6W
△R200F	R625	R626	401K5707	R,CARBON 27K 5% 1/6W
R304	R306		401K5709	R,CARBON 33K 5% 1/6W
R2005			401K5711	R,CARBON 39K 5% 1/6W
R301	R302	R623	401K5713	R,CARBON 47K 5% 1/6W
R632			401K5715	R,CARBON 56K 5% 1/6W
R644			401K5717	R,CARBON 68K 5% 1/6W
R5C7	R5H1	R57A	401K5721	R,CARBON 100K 5% 1/6W
R57H	R57N	R608		
R303	R305		401K5739	R,CARBON 560K 5% 1/6W
△R5CA	△R5C2	△R5C3	401K5743	R,CARBON 820K 5% 1/6W
△R5C4				
R55N			40216224	R,WIRE 0.75H 5% 5W
△R562			40224275	R,WIRE 1.2K 5% 7W
R985	R986	R987	403F1217	R,METAL OXIED 68K 5% 1W
R410			40371101	R,METAL 1.0H 5% 1W
R7F1			40371109	R,METAL 2.2H 5% 1W
R7F2			40371143	R,METAL 56H 5% 1W

SYMBOL			PARTS NO	DESCRIPTION
C743B	C743G	C743R	42AA1527	C,CERAMIC 25V 0.01UF
C626	C7AF	C732	42AA1538	C,CERAMIC 25V 0.1UF
C752	C76A	C76E		
C76F	C765	C766		
C767	C791			
C423	C5HF	C5HG	42AA2726	C,CERAMIC 50V 0.01UF
C5H8	C71A	C721		
C76H	C782	C951		
C957	C959			
C421	C422	C424	42AA2744	C,CERAMIC 25V 0.1UF
C50P	C50T	C501		
C502	C503	C504		
C505	C508	C509		
C510	C511	C514		
C516	C518	C521		
C524	C530	C531		
C532	C599	C7AA		
C7E1	C711	C712		
C713B	C713G	C713R		
C714	C715B	C715G		
C715R	C731	C751		
C76G	C763B	C763G		
C763R	C79G	C798		
C8A2	C953	C954		
C960	C981			
C51A			42AA2746	C,CERAMIC 25V 0.22UF
C5HH			42CA1426	C,CERAMIC 50V 27PF
C5H9	C725R		42CA1428	C,CERAMIC 50V 33PF
C723B	C723G	C723R	42CA1432	C,CERAMIC 50V 47PF
C725B	C725G			
C716			42CA1434	C,CERAMIC 50V 56PF
C7A9	C871	C874	42CA1440	C,CERAMIC 50V 100PF
C76J			42CA1450	C,CERAMIC 50V 270PF
C517			42CA1456	C,CERAMIC 50V 470PF
C5H6			42CA1464	C,CERAMIC 50V 1000PF
C7AH			42CA7440	C,CERAMIC 50V 100PF
C958			42CA7446	C,CERAMIC 50V 180PF
C7A3			42CA7448	C,CERAMIC 50V 220PF
C4E2	C79A		42CA7456	C,CERAMIC 50V 470PF
C901			420C9551	C,CERAMIC 500V 100PF
C591			420C9555	C,CERAMIC 500V 220PF

SYMBOL			PARTS NO	DESCRIPTION
⚠C5R1	C902		420C9563	C,CERAMIC 500V 1000PF
C571			420C9567	C,CERAMIC 500V 2200PF
C769			420C9569	C,CERAMIC 500V 3300PF
C558			420C9571	C,CERAMIC 500V 4700PF
C903			420DK108	C,CERAMIC 2KV 10000PF
C904	C905		420D0019	C,CERAMIC 2KV 1000PF
⚠C602	⚠C603	⚠C607	420EC067	C,CERAMIC 250V 2200PF
⚠C508				
C611			420JJ088	C,CERAMIC 2K 220PF
C659	C669		420J8061	C,CERAMIC 560PF 1KV10%-AT
C343	C403	C405	421A0425	C,CERAMIC 50V 0.01UF
C808	C840		421CA005	C,CERAMIC 50V 220PF
C804	C805		421CB029	C,CERAMIC 50V 47PF
C808	C840		421C1005	C,CERAMIC 50V 220PF
C804	C805		421C2029	C,CERAMIC 50V 47PF
C5U1	C57F	C57G	421D6009	C,CERAMIC 25V 0.1UF
C577	C579	C801		
C803				
C817	C818		423A2015	C,CERAMIC 50V 10PF
C326	C629	C631	427F4601	C,FILM 50V 1000PF
C598			427F4602	C,FILM 50V 1200PF
C323			427F4605	C,FILM 50V 2200PF
C625	C632	C635	427F4613	C,FILM 50V 0.01UF
C324	C325	C630	427F4617	C,FILM 50V 0.022UF
C5W3			427F4620	C,FILM 50V 0.039UF
C59A			427F4622	C,FILM 50V 0.056UF
C327			427F4624	C,FILM 50V 0.082UF
C304	C306	C312	427F4625	C,FILM 50V 0.1UF
C318	C319	C322		
C329	C427	C624		
C628	C633	C671		
C520			427F4651	C,FILM 50V 1000PF
C303	C305		427F4661	C,FILM 50V 6800PF
C5W1			427F4663	C,FILM 50V 0.01UF
C955			427F4669	C,FILM 50V 0.033UF
C7A6	C741B	C741G	427F4673	C,FILM 50V 0.068UF
C741R				
C523			427F4675	C,FILM 50V 0.1UF
C328			427F4695	CQ93M1H681J,BT
C506			428B3019	C,METAL FILM 50V 0.33UF

SYMBOL			PARTS NO	DESCRIPTION
C701B	C701G	C701R	430B6065	C,ELEC 50V 10UF
C824	C875			
C5HA			430B6069	C,ELEC 50V 100UF
C768			430B6101	C,ELEC 100V 47UF
C744B	C744G	C744R	430B6552	C,ELEC 250V 1.0UF
C342			430B8142	C,ELEC 16V 22UF
C341			430B8176	C,ELEC 50V 2.2UF
⚠C5F1			430B9015	C,ELEC 10V 47UF
C668			430B9016	C,ELEC 10V 100UF
C667			430B9019	C,ELEC 10V 470UF
C722	C762		430B9030	C,ELEC 16V 220UF
C664			430B9032	C,ELEC 16V 470UF
C663			430B9033	C,ELEC 16V 1000UF
C622	C623		430B9038	C,ELEC 25V 10UF
C781			430B9041	C,ELEC 25V 47UF
C627			430B9042	C,ELEC 25V 100UF
C666			430B9043	C,ELEC 25V 220UF
C554	C662		430B9045	C,ELEC 25V 470UF
C404	C406		430B9056	C,ELEC 35V 330UF
C621	C634		430B9062	C,ELEC 50V 2.2UF
C612	C746		430B9065	C,ELEC 50V 10UF
C407			430B9070	C,ELEC 50V 220UF
C783			430B9094	C,ELEC 100V 1.0UF
C5H1			430B9552	C,ELEC 250V 1.0UF
C745			430B9556	C,ELEC 250V 10UF
C5G1			430CH358	C,ELEC 250V 47UF
⚠C2005			430C0039	C,ELEC 10V 220UF
C529			430C0048	C,ELEC 16V 100UF
C512			430C0054	C,ELEC 25V 10UF
C5HK	C5H3	C507	430C0058	C,ELEC 25V 47UF
C533				
C764			430C8423	C,ELEC 16V 470UF
C52A			4302F061	C,ELEC 50V 1.0UF
C660	C661	C665	4302J046	C,ELEC 25V 1000UF
C658			4302J102	C,ELEC 100V 100UF
C657			4302J103	C,ELEC 100V 220UF
C654			4302J559	C,ELEC 250V 47UF
C653			4302J560	C,ELEC 250V 100UF
C5G3			4309J171	C,ELEC 200V 33UF
⚠C609			43198004	C,ELEC 400V 180UF

SYMBOL			PARTS NO	DESCRIPTION
C408			428B3021	C,METAL FILM 50V 0.47UF
C5HE			428B3025	C,METAL FILM 50V 1.0UF
C5G2			428CJ022	C,METAL FILM 250V 0.1UF
C4E3			428D0053	C,METAL 100V 0.1UF
C673	C742B	C742G	428D0093	C,METALFILM 250V 0.1UF
C742R				
C610			428D0165	C,FILM 400V 0.022UF
⚠C563			42816018	C,FILM 100V 3.9UF J
⚠C57E			42816352	C,FILM 250V 0.12UF 5%
⚠C576			42816353	C,FILM 250V 0.15UF 5%
⚠C573			42816361	C,FILM 250V 0.47UF 5%
⚠C578			42816363	C,FILM 250V 0.68UF 5%
⚠C561			42818005	C,METAL 2.0KV 5200PF
⚠C562			42818222	C,METAL FILM1.6KV 7500PF
⚠C604	C613		42824857	C,FILM 250V 0.1UF
⚠C601			42824861	C,FILM 250V 0.47UF
C724B	C724G	C724R	42844417	C,METAL FILM 250V 0.22UF
C950			42899115	C,METAL 1000V 0.047UF
⚠C57A			42899172	C,FILM 400V 0.36UF
⚠C5R2			430A4031	C,ELEC 16V 10UF
C761			430B6015	C,ELEC 10V 47UF
C582	C79E		430B6017	C,ELEC 10V 220UF
C313	C314	C317	430B6029	C,ELEC 16V 100UF
C320	C330	C525		
C528	C825			
C311	C315	C316	430B6030	C,ELEC 16V 220UF
C331	C802		430B6032	C,ELEC 16V 470UF
C332			430B6033	C,ELEC 16V 1000UF
C307	C308		430B6039	C,ELEC 25V 22UF
C33A	C33C	C425	430B6041	C,ELEC 25V 47UF
C426	C551	C77F		
C361			430B6042	C,ELEC 25V 100UF
C952			430B6043	C,ELEC 25V 220UF
C793			430B6061	C,ELEC 50V 1.0UF
C301	C302	C515	430B6062	C,ELEC 50V 2.2UF
C519	C872	C873		
C705			430B6063	C,ELEC 50V 3.3UF
C309	C310	C597	430B6064	C,ELEC 50V 4.7UF
C7AE	C7A7	C771		
⚠C2001	C4E4	C7A8	430B6065	C,ELEC 50V 10UF

SYMBOL	PARTS NO	DESCRIPTION
C522	433A4025	C,ELEC 16V 47UF
C596	433A4055	C,ELEC 50V 1.0UF
C983	433A4056	C,ELEC 50V 2.2UF
C982	433A4058	C,ELEC 50V 4.7UF
C581	433A7014	C,ELEC 16V 100UF

REPLACEMENT PARTS LIST

The components specified for Model JC-1735VMR

Note: The components identified by ⚠ make are critical for safety.
Replace only with parts Number specified.

SYMBOL			PARTS NO	DESCRIPTION
*** CRT & TUNER ***				
⚠CRT			33017551	CRT M41LJC101XX20(U3)(R)
*** ICS ***				
IC671			370A1009	IC UPC1093J-T (REG)
IC952			370KE011	IC LM4040CIM3-4.1(X)
IC302			37001117	IC BA5415A (AMP)
IC361			37005193	IC PQ12RF11 (REG)
IC503			37005221	IC UPC78M09AHF
IC331			37005270	IC UPC2412AHF
IC803			37005277	IC PQ05RR13 (REG)
IC401			37006019	IC TEA8172
IC501			37009034	IC UPC1883CT
IC501			37009035	IC UPC1883CT(MS)
IC420			37011307	IC LA6501MA (OP AMP)
IC301			37011326	IC UPC1853CT-0
⚠IC951			37011333	IC UPC5022CT-096 (100MV)
IC711			37011346	IC LM1282N(VIDEO PRE AMP)
IC7E1			37053198	MOS HD74HC08P
IC802			37055537	MOS NM24C04EN
IC502			37056115	IC UPC4741C
⚠IC5H1			37056615	IC BA10393
IC5H2			37056616	IC BA10358
IC591	IC732	IC741	37056926	IC BA10324A (Q OP-AMP)
IC8A1			37074324	MOS 24LC21-1/P (E-EPROM)
IC621			37076081	IC UC3842N
IC531	IC532	IC731	37076176	MOS M62393P
IC751				
IC791			37076298	MOS M35043-052SP
IC7A1			37076304	IC M52347SP
IC721			37076309	IC VP513
IC801			37076329	MOS UPD78014FYCW-W07
*** TRANSISTORS ***				
Q5R1	Q623	Q624	350C7216	TR 2SC945-T P
Q626	Q628	Q630		
Q632	Q671	Q672		
⚠Q2006	Q5H9	Q552	350D7217	TR 2SC945-T Q
Q629			350F4211	TR 2SD571-T K

SYMBOL			PARTS NO	DESCRIPTION
ZD626			360K3692	DIODE RD20ESB(3)-T4
ZD2003			360K3699	DIODE RD24ES AB1-T4
ZD628			360K3711	DIODE RD30ESB(3)/ESAB(3)
D621	D622		361KG523	DIODE ERA15-04
D602			361K7174	DIODE RU1P V1
D950			361K7312	DIODE EP01C-V
D621	D622		361K7523	DIODE ERA15-04V1
⚠D2001			361K7562	DIODE EGP10G G23
D603	D629	D633	361K7570	DIODE DINL20
D656				
D57A	D57H	D576	361K7754	DI 1SR139-600 T31
D578				
D552			36107293	DIODE RK14
D654	D655		36107352	DIODE RL2Z-LFC4
D651			36107512	DIODE RG4C,LFK2
D5G3	D553		36107518	DIODE RG2
D652			36107694	DIODE RG4A(LF-K2)
⚠D561			36107716	DIODE FMP-3FU
D653			36107729	DIODE YG901C2
⚠D562			36107764	DIODE ERD09-15J9
⚠D601			36108201	DIODE,NETWORK D5SBA60S
LED101			36801021	LED SML19416W-LF38
LED601			36801397	LED SEL1915CAM-LF58(C,D)
D401	D5H1		369K2136	DIODE RGP10G,AT
⚠TH602			38102070	THERMISTOR SCK-105L
⚠TH601			38112058	THERMISTOR,POSITIVE
⚠PC601	⚠PC602	⚠PC603	38200354	PHOTOCOUPLER PC123FY2
*** TRANSFORMERS ***				
⚠T551			45804021	TRANS,H.DRAIVE
L5G3			46206014	COIL,CHOKE 4MH
⚠T5C1			46309810	SWITCHING TRANS(46309810)
⚠T5R1			47105706	FBT
*** VARIABLE RESISTORS ***				
VR952			410G1313	R,VARIABLE B10K
VR581	VR951		410G1407	R,VARIABLE B1K
⚠VR5R1			415K5162	R,VARIABLE 100K
VR671			41505103	R,VARIABLE B500

SYMBOL			PARTS NO	DESCRIPTION
Q581	Q7F1		35CG1018	TR 2SD2005-T105 R
Q781			35C4448	TR,2SC1473-TA R
Q101	Q102	⚠Q2007	350K3517	TR 2SA733/2SA733A-T Q
Q5HA	Q553	Q592		
Q625	Q627			
⚠Q5F1			35C11500	TR 2SA1767
Q591			35C71505	TR 2SD1957 F
Q741B	Q741G	Q741R	35C84417	TR,2SC1473 Q
Q982	Q983		35C94940	TR 2SC4632LS
⚠Q561			35C95220	TR 2SC5302
Q361	Q57A	Q576	351C0531	TR AA1L4M-T
Q577				
Q2001			351C0561	TR DTA144ES-T
Q571			351C0562	TR DTC144ES-T
Q103	Q104		351C0641	TR DTC114YS-T
⚠Q573	⚠Q579		35127300	TR 2SK94T-M
⚠Q601			351274?2	TR 2SK2147-01R
Q5G1			35127470	TR 2SJ306
Q555			35127630	TR 2SK1904
⚠Q57F	⚠Q574		35127890	TR 2SK2518-01MR
Q621	Q622		355D2715	TR BA1A4M
*** DIODES ***				
ZD624			360KC117	DIODE RD39EB(4)-T1
ZD601			360KC186	DIODE RD22E B1-T1
ZD341			360KC671	DIODE RD12ESB(2)/ESAB(2)
⚠D2002	D301	D5G1	360K1027	DIODE 1SS132
D5G2	D605	D624		
D625	D627	D628		
D630	D631	D632		
D634	D658			
ZD621	ZD625		360K3098	DIODE RD12EB(3)-T4
ZD624			360K3117	DIODE RD39EB(4)-T4
ZD601			360K3186	DIODE RD22EB(1)-T4
ZD623			360K3602	DIODE RD2.0ESB(1)-T4
ZD5E1	ZD629		360K3643	DIODE RD6.2ES AB2-T4
ZD7F1			360K3647	DIODE RD6.8ESB(2)-T4
⚠ZD2001			360K3652	DIODE RD7.5ESB(3)-T4
ZD341			360K3671	DIODE RD12ES AB2-T4
ZD2002			360K3675	DIODE RD13ESB(2)-T4

SYMBOL			PARTS NO	DESCRIPTION
*** RELAYS & SWITCHES ***				
SW581			65161081	SWITCH SLIDE 00220867
S101	S102	S105	653F0067	TACT SWITCH PCO 05K
S106	S107			
S103			65360047	TACT SWITCH KSM0642A
⚠SW601			65360060	PUSH SWITCH ESB91631AXL
⚠RL601			65660038	RELAY SDT-SS-112DM
*** COILS & FILTERS ***				
LC7A1	LC7A2	LC711	390J9027	FILTER ZJSC-R12-100TA
LC791	LC792B	LC792G		
LC792R				
MRC801	MRC802		39040002	RC,NETWORK 10K 1K 0.01UF
MRC803			39040003	RC,NETWORK 1K 0.01UF
⚠L562			60906064	COIL,WIDTH(80UH)
⚠L571			60919166	COIL,H.LIN 15T
L791			610E1711	COIL,FILTER 3.3UH
L721			610E1727	COIL,FILTER 68UH
L602			610E1737	COIL,FILTER 470UH
⚠L561			610F3014	COIL,FILTER 3.3UH
L361	L5G1		610F3025	COIL,FILTER 47UH
L657	L658	L659	610F5002	FERRITE BEADS (B-02-RT)
L660	L651			
L901	L902	L903	610F8036	COIL,FILTER 0.39UH
L601			610G0111	INDUCTOR,BEADS(FBR07HA121
L652	L654	L655	610G0257	COIL,CHOKE 33UH
L651	L656		610G0262	COIL,CHOKE PJ85-101K
L551			610J9125	COIL,FILTER 220K LHL10TB
L301			610J9128	FILTER COIL 102J LHL10TB
⚠L5R1			610J9130	FILTER COIL SPT0405A100K
⚠FL602			61062209	LINE FILTER (HR-28-E702)
⚠FL601			61062216	LINE FILTER (SS24V-15045)
L581			61070257	COIL,CHOKE 8MH (K)
L553			61099107	FILTER CHOKE 33UH 2.0A
⚠DEG			61317209	DEGAUSSING COIL (15.8H 80
LC721			616K6027	NOISE FILTER 2A222-TA
LC742	LC743	LC771	616K6028	NOISE FILTER 1H223X-TA
LC8A1	LC901			
LC701B	LC701G	LC701R	616K6827	NOISE FILTER
LC741			616K6966	NOISE FILTER

SYMBOL	PARTS NO	DESCRIPTION
D5G3	61605135	FERRITE CORE
*** PWB ASSYS ***		
	84R36C02	VIDEO PWB ASSY
	84R37F01	MAIN PWB ASSY
*** ELECTRICAL PARTS & MISCELLANEOUS PARTS ***		
SG901 SG902 SG903 SG904	329J0047	ARRESTER (300V),AT52
CN-GND	32990205	INSULATING CAP TIC-3.5(
SP	63010502	SPEAKER 90*50MM 16H 2W PH
X801	64098039	X'TAL(10.000MHZ)
⚠F601	66699064	FUSE UL(ET) 250V 4A
F601	66699065	FUSE S506 - 250V - 4A
SG905	667K6007	SPARK GAP 1.5KV
CN-CRT	70032063	CRT SOCKET CVT3256-0175
JK301	70505059	EARPHONE JACK
JK302 JK303	70505082	JACK,HEADPHONE YKB21-5130
⚠IN501	70521064	AC RECEPTACLE
CABLE	73893234	SIGNAL CABLE MD15P-XH11P
CORD	75513033	POWER CORD
*** APPEARANCE PARTS ***		
	2X319382	CABINET FRONT ASSY
	2X319401	CABINET BACK
	2X428441	REVOLVING STAND ASSY
	2X541791	COIL SPRING
	2X546041	CHASSIS BASE
*** PRINTED & PACKING MATERIALS ***		
	2X784361	NAME PLATE,INSTRUCTION
	2X832321	FILLER(T)CARTON
	2X832331	FILLER(B)CARTON
	2X832371	CARTON BOX(CN505R)
	2X832891	SHEET,PROTECTION
	24813191	BAG,POLYETHYLENE(150*370)
	78130513	USER'S MANUAL CN503/5B,R

SYMBOL	PARTS NO	DESCRIPTION
R747R R998	40AA3179	R,CHIP 1.8K 5% 1/10W
R341 R4EE R520	40AA3181	R,CHIP 2.2K 5% 1/10W
R7AC R7A9 R7E3		
R71R R992 R996		
R999		
R5HL R5H7 R74K	40AA3183	R,CHIP 2.7K 5% 1/10W
R972		
R5HH R5H9 R59G	40AA3185	R,CHIP 3.3K 5% 1/10W
R59W R791		
R4E4 R4E5 R59T	40AA3187	R,CHIP 3.9K 5% 1/10W
R71P R997		
R7A5	40AA3188	R,CHIP 4.3K 5% 1/10W
R71H	40AA3189	R,CHIP 4.7K 5% 1/10W
R5W1	40AA3190	R,CHIP 5.1K 5% 1/10W
R73H R739B R739G	40AA3193	R,CHIP 6.8K 5% 1/10W
R739R R772 R984		
R4E6 R5HN R73C	40AA3195	R,CHIP 8.2K 5% 1/10W
R4EA R40F R423	40AA3197	R,CHIP 10K 5% 1/10W
R424 R5HA R5HE		
R5HP R5W2 R528		
R551 R552 R59H		
R59X R647 R648		
R7AG R7A1 R7A2		
R7E2 R7E4 R71S		
R71W R711 R731		
R748B R748G R748R		
R751 R771 R8A6		
R876 R961 R973		
R59P R782	40AA3199	R,CHIP 12K 5% 1/10W
R523 R956 R991	40AA3201	R,CHIP 15K 5% 1/10W
R5HF R5HM R7E1	40AA3205	R,CHIP 22K 5% 1/10W
R59K R8A2 R959	40AA3207	R,CHIP 27K 5% 1/10W
R960		
R5W5 R599 R73E	40AA3209	R,CHIP 33K 5% 1/10W
R73F R875		
R73G	40AA3211	R,CHIP 39K 5% 1/10W
R7A8	40AA3212	R,CHIP 43K 5% 1/10W
R5W3 R5W4 R8A1	40AA3213	R,CHIP 47K 5% 1/10W
R968 R971		
R59L R59Y	40AA3215	R,CHIP 56K 5% 1/10W
R784	40AA3217	R,CHIP 68K 5% 1/10W

SYMBOL	PARTS NO	DESCRIPTION
*** RESISTORS ***		
R425	40AAD149	R,CHIP 100H 5% 1/2W
R717B R717G R717R	40AAD153	R,CHIP 150H 5% 1/2W
R721B R721G R721R		
R724B	40AA1149	R,CHIP 100H 5% 1/8W
R4EF R7A6 R7A7	40AA3000	R,CHIP 0.0H 5% 1/10W
R70A R71F R71G		
R793 R794 R795		
R582 R734	40AA3125	R,CHIP 10H 5% 1/10W
R619 R722B R722G	40AA3133	R,CHIP 22H 5% 1/10W
R722R		
R8A3 R8A4	40AA3141	R,CHIP 47H 5% 1/10W
R5HK R581 R712	40AA3149	R,CHIP 100H 5% 1/10W
R713 R724G R724R		
R73AB R73AG R73AR		
R732 R733 R752		
R753 R799		
R723B R723G R723R	40AA3153	R,CHIP 150H 5% 1/10W
R518 R746B R746G	40AA3157	R,CHIP 220H 5% 1/10W
R746R		
R871 R872	40AA3161	R,CHIP 330H 5% 1/10W
R716B R716G R716R	40AA3163	R,CHIP 390H 5% 1/10W
R724 R774 R775		
R522 R526 R71E	40AA3167	R,CHIP 560H 5% 1/10W
R781		
R718B R718G R718R	40AA3169	R,CHIP 680H 5% 1/10W
R74J		
R426 R428 R5HT	40AA3173	R,CHIP 1.0K 5% 1/10W
R501 R502 R503		
R504 R505 R506		
R507 R508 R509		
R514 R515 R521		
R527 R531 R532		
R634 R7AF R71V		
R719 R73K R773		
R790 R798 R8A5		
R8A7 R878		
R5H6 R525 R71K	40AA3175	R,CHIP 1.2K 5% 1/10W
R71M		
R966	40AA3177	R,CHIP 1.5K 5% 1/10W
R71A R747B R747G	40AA3179	R,CHIP 1.8K 5% 1/10W

SYMBOL	PARTS NO	DESCRIPTION
R7AH	40AA3218	R,CHIP 75K 5% 1/10W
R4E8 R5HG R59M	40AA3221	R,CHIP 100K 5% 1/10W
R877	40AA3229	R,CHIP 220K 5% 1/10W
R59U	40AA3233	R,CHIP 330K 5% 1/10W
R5H8 R5W6 R74A8	40AA3237	R,CHIP 470K 5% 1/10W
R74AG R74AR		
R4E7 R783	40AA3245	R,CHIP 1.0M 5% 1/10W
R873 R874	40AA3253	R,CHIP 2.2M 5% 1/10W
R427 R702B R702G	40AB3137	R,CHIP 33H 1% 1/10W
R702R		
R701B R701G R701R	40AB3146	R,CHIP 75H 1% 1/10W
R50A	40AB3172	R,CHIP 910H 1% 1/10W
R52E	40AB3173	R,CHIP 1.0K 1% 1/10W
R510 R957	40AB3175	R,CHIP 1.2K 1% 1/10W
R517	40AB3177	R,CHIP 1.5K 1% 1/10W
R40A R40E R51G	40AB3179	R,CHIP 1.8K 1% 1/10W
R969 R970	40AB3180	R,CHIP 2.0K 1% 1/10W
R524	40AB3181	R,CHIP 2.2K 1% 1/10W
R792	40AB3182	R,CHIP 2.4K 1% 1/10W
R714	40AB3183	R,CHIP 2.7K 1% 1/10W
R516	40AB3184	R,CHIP 3.0K 1% 1/10W
R422	40AB3185	R,CHIP 3.3K 1% 1/10W
R50E	40AB3188	R,CHIP 4.3K 1% 1/10W
R52A	40AB3191	R,CHIP 5.6K 1% 1/10W
R958 R982	40AB3193	R,CHIP 6.8K 1% 1/10W
R401 R403 R74EB	40AB3195	R,CHIP 8.2K 1% 1/10W
R74EG R74ER		
R402 R404 R421	40AB3197	R,CHIP 10K 1% 1/10W
R51A R51F R51H		
R519 R964		
R51K R981	40AB3199	R,CHIP 12K 1% 1/10W
R51E R715 R983	40AB3201	R,CHIP 15K 1% 1/10W
R738B R738G R738R	40AB3202	R,CHIP 16K 1% 1/10W
R735B R735G R735R	40AB3203	R,CHIP 18K 1% 1/10W
R736R R741B R741G	40AB3205	R,CHIP 22K 1% 1/10W
R741R R742B R742G		
R742R		
R736B R736G R965	40AB3208	R,CHIP 30K 1% 1/10W
R953	40AB3209	R,CHIP 33K 1% 1/10W
R737B R737G R737R	40AB3211	R,CHIP 39K 1% 1/10W

SYMBOL	PARTS NO	DESCRIPTION
R744B R744G R744R R59A R59F	40AB3211 40AB3213 40AB3215	R.CHIP 39K 1% 1/10W R.CHIP 47K 1% 1/10W R.CHIP 56K 1% 1/10W
R743B R743G R743R R59E R74FB R74FG R74FR R745B R745G R745R	40AB3224 40AB3225 40AB3237	R.CHIP 130K 1% 1/10W R.CHIP 150K 1% 1/10W R.CHIP 470K 1% 1/10W
R680 R621 R631	401CF639 401CF749	R.CARBON 39H 5% 1/4W R.CARBON 1.5M 5% 1/4W
R55P R988 R680 R5G1 R656 R906	401C6633 401C6639 401C6657 401C6677 401C6721	R.CARBON 22H 5% 1/4W R.CARBON 39H 5% 1/4W R.CARBON 220H 5% 1/4W R.CARBON 1.5K 5% 1/4W R.CARBON 100K 5% 1/4W
R621 R631 △R2001 △R554 R655 △R950 △R5F2 R905	401C6749 401G6109 401G6125 401G6197 401H5649	R.CARBON 1.5M 5% 1/4W R.CARBON 2.2H 5% 1/4W R.CARBON 10H 5% 1/4W R.CARBON 10K 5% 1/4W R.CARBON 100H 5% 1/2W
R618 R990 R411 R901 R902 R903 △R5R1	401H5651 401H5673 401H6601 401H6637 401H6647	R.CARBON 120H 5% 1/2W R.CARBON 1.0K 5% 1/2W R.CARBON 1.0H 5% 1/2W R.CARBON 33H 5% 1/2W R.CARBON 82H 5% 1/2W
R409 R594 △R5F3 △R601 R646	401H6665 401H6697 401H6725 401H6737 401H6745	R.CARBON 470H 5% 1/2W R.CARBON 10K 5% 1/2W R.CARBON 150K 5% 1/2W R.CARBON 470K 5% 1/2W R.CARBON 1.0M 5% 1/2W
R307 R308 R5G3 R55L R638 R620 R904 △R5C6 △R57G △R57M △R579 R597 R635 R639 R649 R107	401KE658 401K5625 401K5633 401K5649 401K5655	R.CARBON 240H 5% 1/6W R.CARBON 10H 5% 1/6W R.CARBON 22H 5% 1/6W R.CARBON 100H 5% 1/6W R.CARBON 180H 5% 1/6W
R307 R308 R342 R343 R673 R801 R802	401K5658 401K5659 401K5661 401K5663	R.CARBON 240H 5% 1/6W R.CARBON 270H 5% 1/6W R.CARBON 330H 5% 1/6W R.CARBON 390H 5% 1/6W

SYMBOL	PARTS NO	DESCRIPTION
R749B R749G R749R △R5F1 R583	40371207 40372101 40372127	R.METAL 27K 5% 1W R.METAL 1.0H 5% 2W R.METAL 12H 5% 2W
R571 R605 R606 R653 R654 R609 R603 R604	40372165 40372213 40372217 40373159 40373215	R.METAL 470H 5% 2W R.METAL 47K 5% 2W R.METAL 68K 5% 2W R.METAL 270H 5% 3W R.METAL 56K 5% 3W
R55U R607 △R561 R110 R111 R407	40373333 40373337 40383502 404CA670 404CA692	R.METAL 0.33H 5% 3W R.METAL 0.47H 5% 3W R.METAL 1.2H 5% 3W R.METAL 750H 1% 1/6W R.METAL 6.2K 1% 1/6W
R309 R591 R110 R111 R675 △R2003 R640 △R2004 △R2009	404CA743 404C1670 404C1683 404C1687 404C1691	R.METAL 820K 1% 1/6W R.METAL 750H 1% 1/6W R.METAL 2.7K 1% 1/6W R.METAL 3.9K 1% 1/6W R.METAL 5.6K 1% 1/6W
R407 R593 R406 △R2002 R5U3	404C1692 404C1695 404C1697 404C1700 404C1703	R.METAL 6.2K 1% 1/6W R.METAL 8.2K 1% 1/6W R.METAL 10K 1% 1/6W R.METAL 13K 1% 1/6W R.METAL 18K 1% 1/6W
R592 △R5R3 R5U5 R674 R681 R5U2	404C1709 404C1715 404C1721 404C1723 404C1731	R.METAL 33K 1% 1/6W R.METAL 56K 1% 1/6W R.METAL 100K 1% 1/6W R.METAL 120K 1% 1/6W R.METAL 270K 1% 1/6W
R309 R591 R993 R994 R995 △R5H4 R661 R662 △R989	404C1743 404K2731 404K5133 40499507 409A6177	R.METAL 820K 1% 1/6W R.METAL 270K 1% 1/4W R.METAL 22H 5% 1/4W R.METAL 0.22H 5% 1/2W R.FUSE 1.5K 5% 1/4W

*** CAPACITORS ***

C4E6 C526 C956 C595 C402 C792 C636	42AA1509 42AA1513 42AA1516 42AA1517 42AA1521	C.CHIP CERAMIC 50V 1000PF C.CHIP CERAMIC 50V 2200PF C.CHIP CERAMIC 50V 3900PF C.CHIP CERAMIC 50V 4700PF C.CHIP CERAMIC 50V 0.01UF

SYMBOL	PARTS NO	DESCRIPTION
R5R2	401K5665	R.CARBON 470H 5% 1/6W
R657 R658 R671 R108 R109 R311 R312 R5H3 R5R6 R636 R637 R645 R807 R840 R633 R641 R595 R844 R596	401K5669 401K5673 401K5677 401K5679 401K5681	R.CARBON 680H 5% 1/6W R.CARBON 1.0K 5% 1/6W R.CARBON 1.5K 5% 1/6W R.CARBON 1.8K 5% 1/6W R.CARBON 2.2K 5% 1/6W
R803 R804 R643 R57L R672 R677 R408 R361 R5C8 R5C9 R5G2 R57F R57P R57T R57U R57W R622 R624 R627 R629 R630 R642 R808 R832 R833 R834 R835 R841 R846	401K5683 401K5685 401K5689 401K5693 401K5697	R.CARBON 2.7K 5% 1/6W R.CARBON 3.3K 5% 1/6W R.CARBON 4.7K 5% 1/6W R.CARBON 6.8K 5% 1/6W R.CARBON 10K 5% 1/6W
△R200E R628 R678 R828 △R200F R625 R626 R304 R306 R2005	401K5701 401K5705 401K5707 401K5709 401K5711	R.CARBON 15K 5% 1/6W R.CARBON 22K 5% 1/6W R.CARBON 27K 5% 1/6W R.CARBON 33K 5% 1/6W R.CARBON 39K 5% 1/6W
R301 R302 R623 R632 R644 R5C7 R5H1 R57A R57H R57N R608 R303 R305	401K5713 401K5715 401K5717 401K5721 401K5739	R.CARBON 47K 5% 1/6W R.CARBON 56K 5% 1/6W R.CARBON 68K 5% 1/6W R.CARBON 100K 5% 1/6W R.CARBON 560K 5% 1/6W
△R5CA △R5C2 △R5C3 △R5C4 R55N △R562 R985 R986 R987 R410	401K5743 40216224 40224275 403F1217 40371101	R.CARBON 820K 5% 1/6W R.WIRE 0.75H 5% 5W R.WIRE 1.2K 5% 7W R.METAL OXIED 68K 5% 1W R.METAL 1.0H 5% 1W
R7F1 R7F2	40371109 40371143	R.METAL 2.2H 5% 1W R.METAL 56H 5% 1W

SYMBOL	PARTS NO	DESCRIPTION
C743B C743G C743R C626 C7AF C732 C752 C76A C76E C76F C765 C766 C767 C791 C423 C5HF C5HG C5H8 C71A C721 C76H C782 C951 C957 C959 C421 C422 C424 C50P C50T C501 C502 C503 C504 C505 C508 C509 C510 C511 C514 C516 C518 C521 C524 C530 C531 C532 C599 C7AA C7E1 C711 C712 C713B C713G C713R C714 C715B C715G C715R C731 C751 C76G C763B C763G C763R C79G C798 C8A2 C953 C954 C960 C981	42AA1527 42AA1538 42AA2726 42AA2744	C.CERAMIC 25V 0.01UF C.CERAMIC 25V 0.1UF C.CERAMIC 50V 0.01UF C.CERAMIC 25V 0.1UF
C51A	42AA2746	C.CERAMIC 25V 0.22UF
C5HH C5H9 C725R C723B C723G C723R C725B C725G C716 C7A9 C871 C874	42CA1426 42CA1428 42CA1432 42CA1434 42CA1440	C.CERAMIC 50V 27PF C.CERAMIC 50V 33PF C.CERAMIC 50V 47PF C.CERAMIC 50V 56PF C.CERAMIC 50V 100PF
C76J C517 C5H6 C7AH C958	42CA1450 42CA1456 42CA1464 42CA7440 42CA7446	C.CERAMIC 50V 270PF C.CERAMIC 50V 470PF C.CERAMIC 50V 1000PF C.CERAMIC 50V 100PF C.CERAMIC 50V 180PF
C7A3 C4E2 C79A C901 C591	42CA7448 42CA7456 42OC9551 42OC9555	C.CERAMIC 50V 220PF C.CERAMIC 50V 470PF C.CERAMIC 500V 100PF C.CERAMIC 500V 220PF

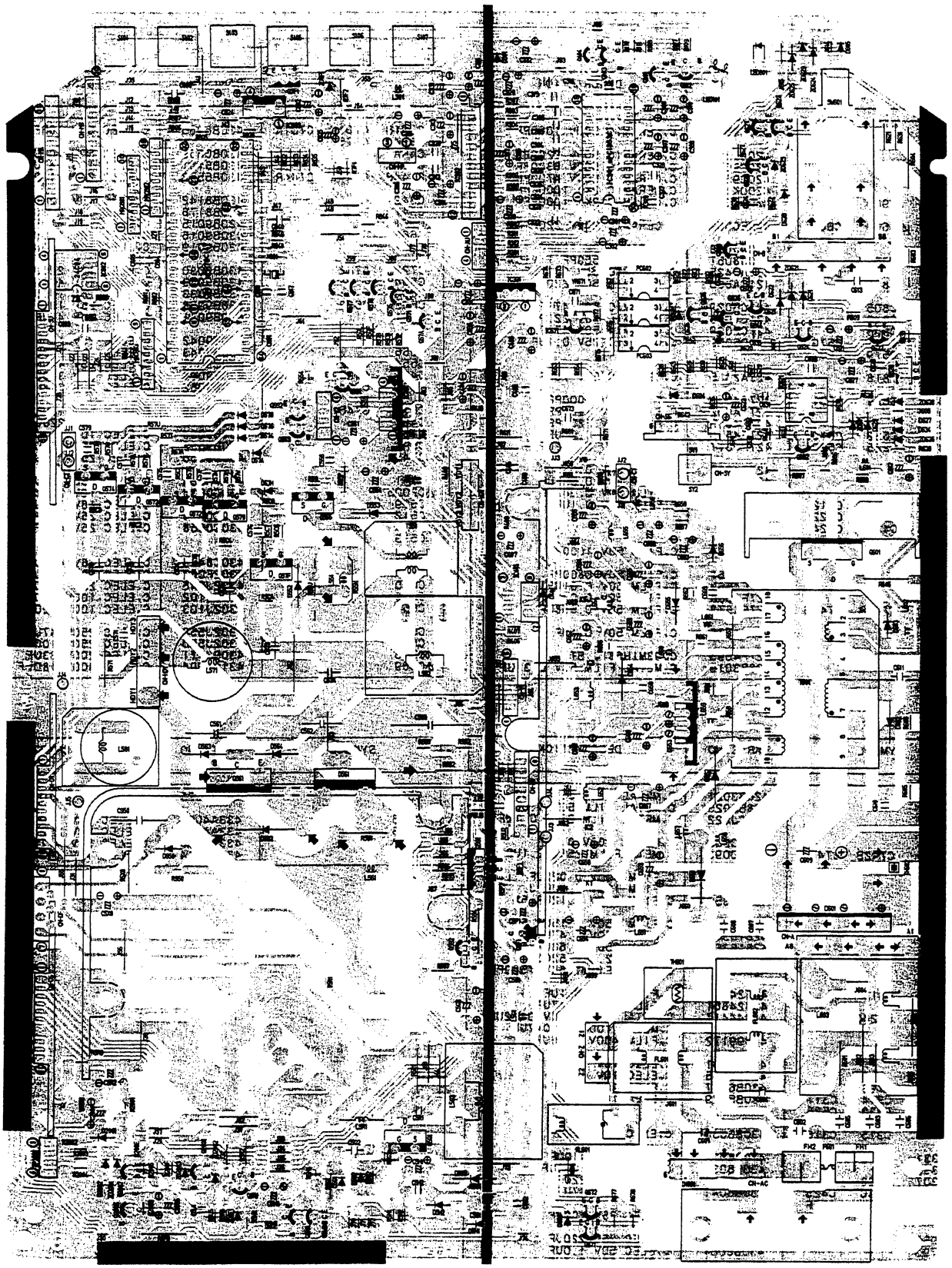
SYMBOL	PARTS NO	DESCRIPTION
⚠C5R1 C902	420C9563	C,CERAMIC 500V 1000PF
C571	420C9567	C,CERAMIC 500V 2200PF
C769	420C9569	C,CERAMIC 500V 3300PF
C558	420C9571	C,CERAMIC 500V 4700PF
C903	420DK108	C,CERAMIC 2KV 10000PF
C904 C905	420D0019	C,CERAMIC 2KV 1000PF
⚠C602 ⚠C603 ⚠C607 ⚠C608	420EC067	C,CERAMIC 250V 2200PF
C611	420JJ088	C,CERAMIC 2K 220PF
C659 C669	420J8061	C,CERAMIC 560PF 1KV10%-AT
C343 C403 C405	421A0425	C,CERAMIC 50V 0.01UF
C808 C840	421CA005	C,CERAMIC 50V 220PF
C804 C805	421CB029	C,CERAMIC 50V 47PF
C808 C840	421C1005	C,CERAMIC 50V 220PF
C804 C805	421C2029	C,CERAMIC 50V 47PF
C5U1 C57F C57G C577 C579 C801 C803	421D6009	C,CERAMIC 25V 0.1UF
C817 C818	423A2015	C,CERAMIC 50V 10PF
C326 C629 C631	427F4601	C,FILM 50V 1000PF
C598	427F4602	C,FILM 50V 1200PF
C323	427F4605	C,FILM 50V 2200PF
C625 C632 C635	427F4613	C,FILM 50V 0.01UF
C324 C325 C630	427F4617	C,FILM 50V 0.022UF
C5W3	427F4620	C,FILM 50V 0.039UF
C59A	427F4622	C,FILM 50V 0.056UF
C327	427F4624	C,FILM 50V 0.082UF
C304 C306 C312 C318 C319 C322 C329 C427 C624 C628 C633 C671	427F4625	C,FILM 50V 0.1UF
C520	427F4651	C,FILM 50V 1000PF
C303 C305	427F4661	C,FILM 50V 6800PF
C5W1	427F4663	C,FILM 50V 0.01UF
C955	427F4669	C,FILM 50V 0.033UF
C7A6 C741B C741G C741R	427F4673	C,FILM 50V 0.068UF
C523	427F4675	C,FILM 50V 0.1UF
C328	427F4695	CQ93M1H681J,BT
C506	428B3019	C,METAL FILM 50V 0.33UF

SYMBOL	PARTS NO	DESCRIPTION
C7018 C701G C701R C824 C875	430B6065	C,ELEC 50V 10UF
C5HA	430B6069	C,ELEC 50V 100UF
C768	430B6101	C,ELEC 100V 47UF
C744B C744G C744R	430B6552	C,ELEC 250V 1.0UF
C342	430B8142	C,ELEC 16V 22UF
C341	430B8176	C,ELEC 50V 2.2UF
⚠C5F1	430B9015	C,ELEC 10V 47UF
C668	430B9016	C,ELEC 10V 100UF
C667	430B9019	C,ELEC 10V 470UF
C722 C762	430B9030	C,ELEC 16V 220UF
C664	430B9032	C,ELEC 16V 470UF
C663	430B9033	C,ELEC 16V 1000UF
C622 C623	430B9038	C,ELEC 25V 10UF
C781	430B9041	C,ELEC 25V 47UF
C627	430B9042	C,ELEC 25V 100UF
C666	430B9043	C,ELEC 25V 220UF
C554 C662	430B9045	C,ELEC 25V 470UF
C404 C406	430B9056	C,ELEC 35V 330UF
C621 C634	430B9062	C,ELEC 50V 2.2UF
C612 C746	430B9065	C,ELEC 50V 10UF
C407	430B9070	C,ELEC 50V 220UF
C783	430B9094	C,ELEC 100V 1.0UF
C5H1	430B9552	C,ELEC 250V 1.0UF
C745	430B9556	C,ELEC 250V 10UF
C5G1	430CH358	C,ELEC 250V 47UF
⚠C2005	430C0039	C,ELEC 10V 220UF
C529	430C0048	C,ELEC 16V 100UF
C512	430C0054	C,ELEC 25V 10UF
C5HK C5H3 C507 C533	430C0058	C,ELEC 25V 47UF
C764	430C8423	C,ELEC 16V 470UF
C52A	4302F061	C,ELEC 50V 1.0UF
C660 C661 C665	4302J046	C,ELEC 25V 1000UF
C658	4302J102	C,ELEC 100V 100UF
C657	4302J103	C,ELEC 100V 220UF
C654	4302J559	C,ELEC 250V 47UF
C653	4302J560	C,ELEC 250V 100UF
C5G3	4309J171	C,ELEC 200V 33UF
⚠C609	43198004	C,ELEC 400V 180UF

SYMBOL	PARTS NO	DESCRIPTION
C408	42883021	C,METAL FILM 50V 0.47UF
C5HE	42883025	C,METAL FILM 50V 1.0UF
C5G2	428CJ022	C,METAL FILM 250V 0.1UF
C4E3	428D0053	C,METAL 100V 0.1UF
C673 C742B C742G C742R	428D0093	C,METALFILM 250V 0.1UF
C610	428D0165	C,FILM 400V 0.022UF
⚠C563	42816018	C,FILM 100V 3.9UF J
⚠C57E	42816352	C,FILM 250V 0.12UF 5%
⚠C576	42816353	C,FILM 250V 0.15UF 5%
⚠C573	42816361	C,FILM 250V 0.47UF 5%
⚠C578	42816363	C,FILM 250V 0.68UF 5%
⚠C561	42818005	C,METAL 2.0KV 5200PF
⚠C562	42818222	C,METAL FILM1.6KV 7500PF
⚠C604 C613	42824857	C,FILM 250V 0.1UF
⚠C601	42824861	C,FILM 250V 0.47UF
C724B C724G C724R	42844417	C,METAL FILM 250V 0.22UF
C950	42899115	C,METAL 1000V 0.047UF
⚠C57A	42899172	C,FILM 400V 0.36UF
⚠C5R2	430A4031	C,ELEC 16V 10UF
C761	43086015	C,ELEC 10V 47UF
C582 C79E	43086017	C,ELEC 10V 220UF
C313 C314 C317 C320 C330 C525 C528 C825	43086029	C,ELEC 16V 100UF
C311 C315 C316	43086030	C,ELEC 16V 220UF
C331 C802	43086032	C,ELEC 16V 470UF
C332	43086033	C,ELEC 16V 1000UF
C307 C308	43086039	C,ELEC 25V 22UF
C33A C33C C425 C426 C551 C77F	43086041	C,ELEC 25V 47UF
C361	43086042	C,ELEC 25V 100UF
C952	43086043	C,ELEC 25V 220UF
C793	43086061	C,ELEC 50V 1.0UF
C301 C302 C515 C519 C872 C873	43086062	C,ELEC 50V 2.2UF
C705	43086063	C,ELEC 50V 3.3UF
C309 C310 C597 C7AE C7A7 C771	43086064	C,ELEC 50V 4.7UF
⚠C2001 C4E4 C7A8	43086065	C,ELEC 50V 10UF

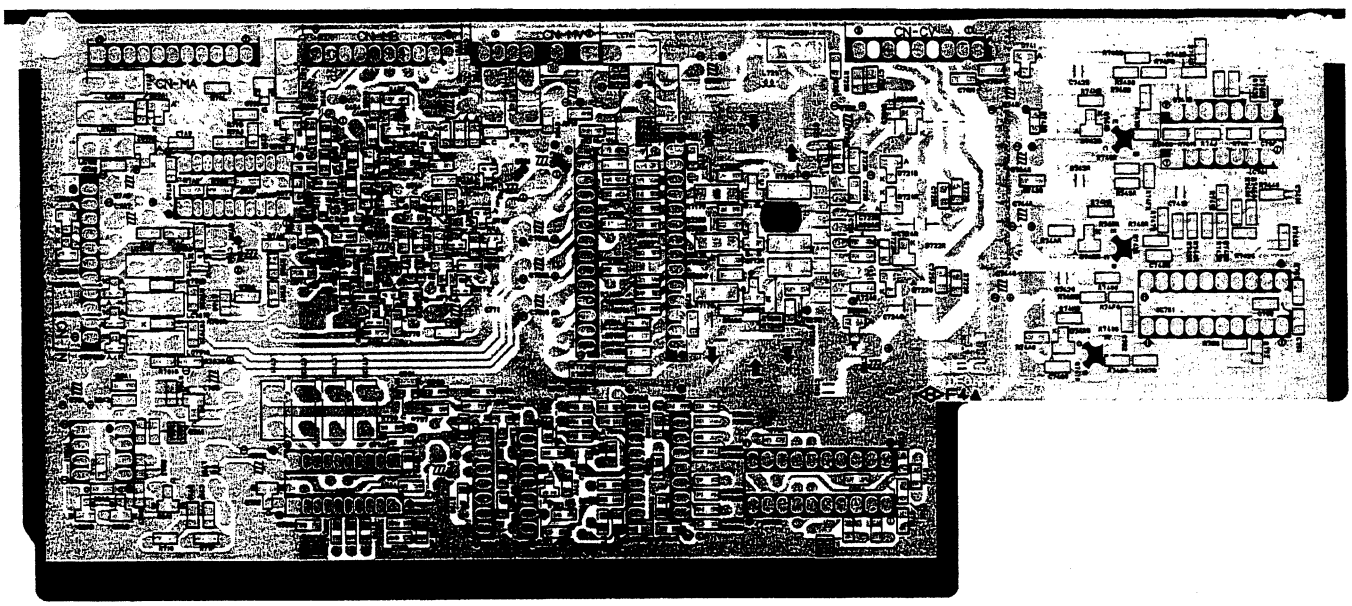
SYMBOL	PARTS NO	DESCRIPTION
C522	433A4025	C,ELEC 16V 47UF
C596	433A4055	C,ELEC 50V 1.0UF
C983	433A4056	C,ELEC 50V 2.2UF
C982	433A4058	C,ELEC 50V 4.7UF
C581	433A7014	C,ELEC 16V 100UF

PRINTED WIRING BOARDS



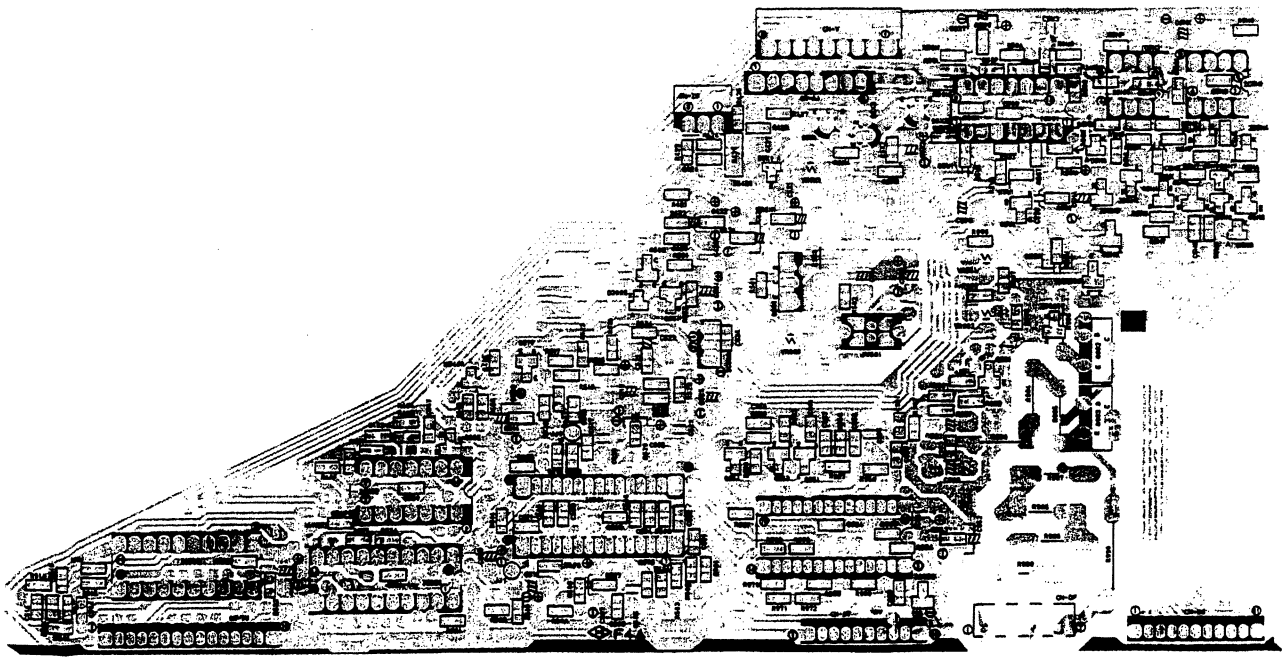
MAIN PWB (PWE-460)

— Solder Side —



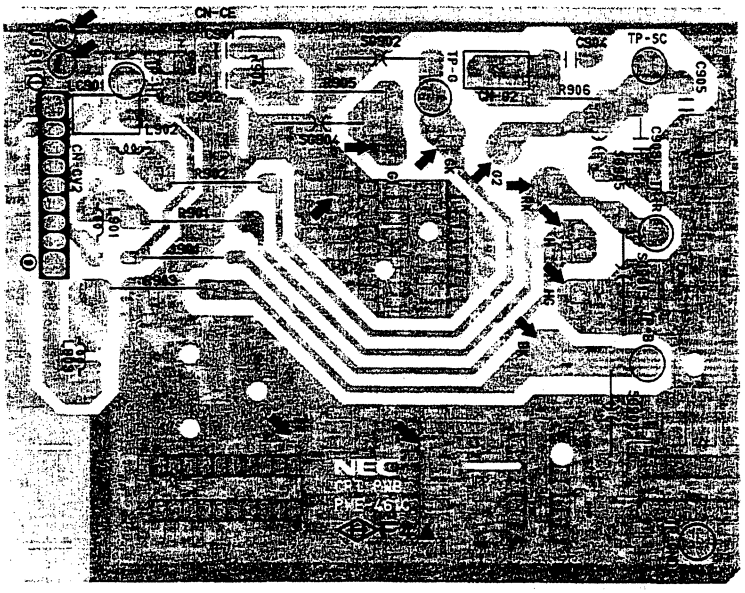
VIDEO PWB (PWE-461A)

— Solder Side —



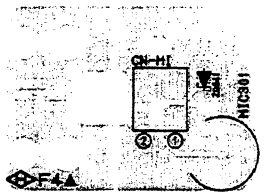
SUB PWB (PWE-461B)

— Solder Side —



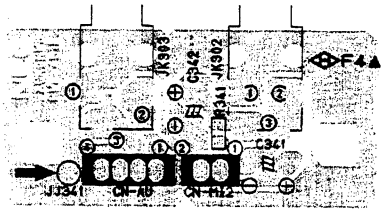
CRT PWB (PWE-461C)

— Solder Side —



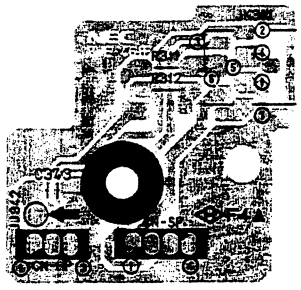
MIC PWB (PWE-461D)

— Solder Side —



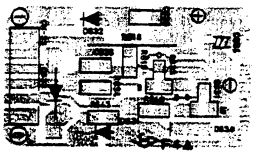
JACK PWB (PWE-461E)

— Solder Side —



HP PWB (PWE-461F)

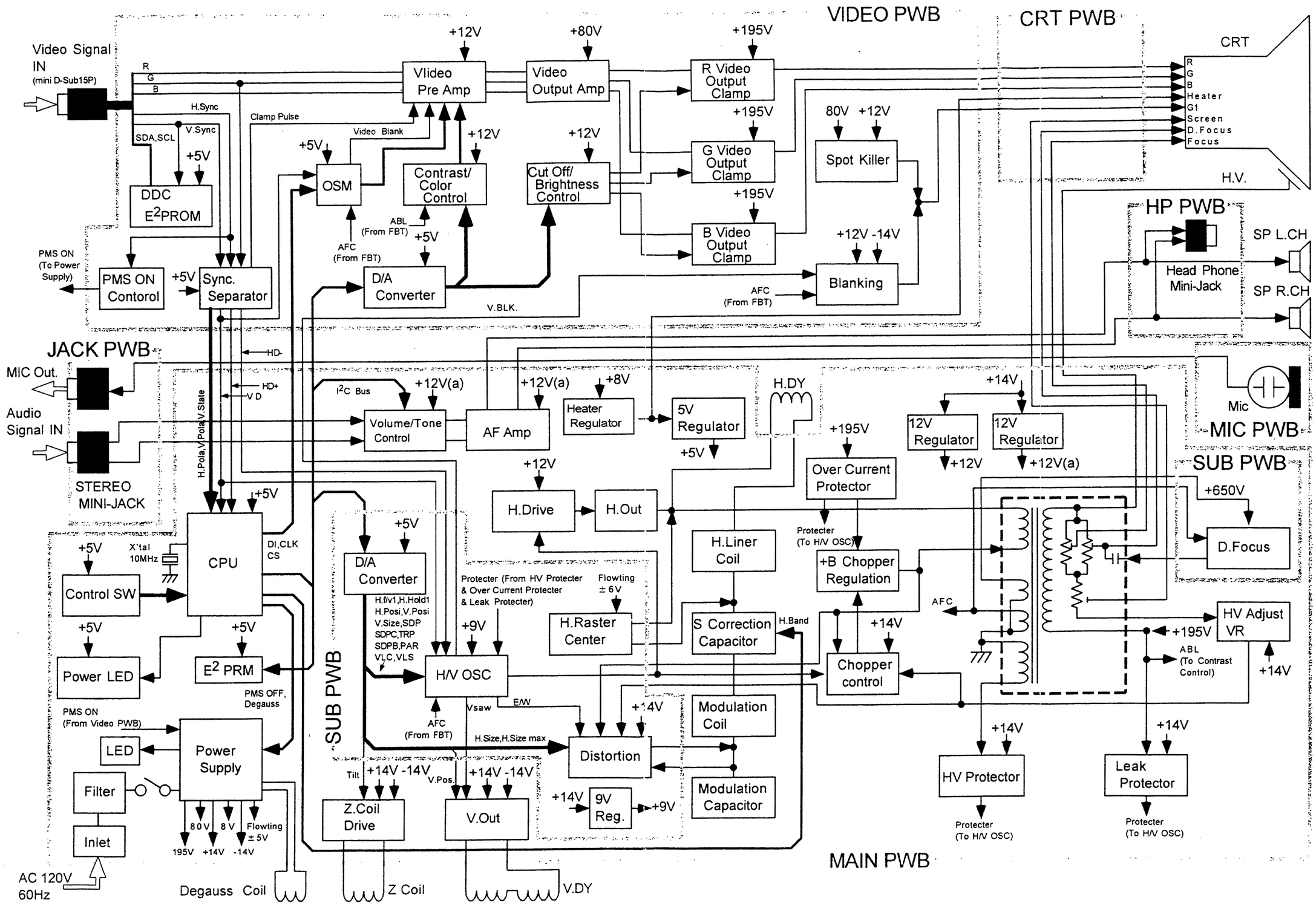
— Solder Side —



(PWE-461G)

— Solder Side —

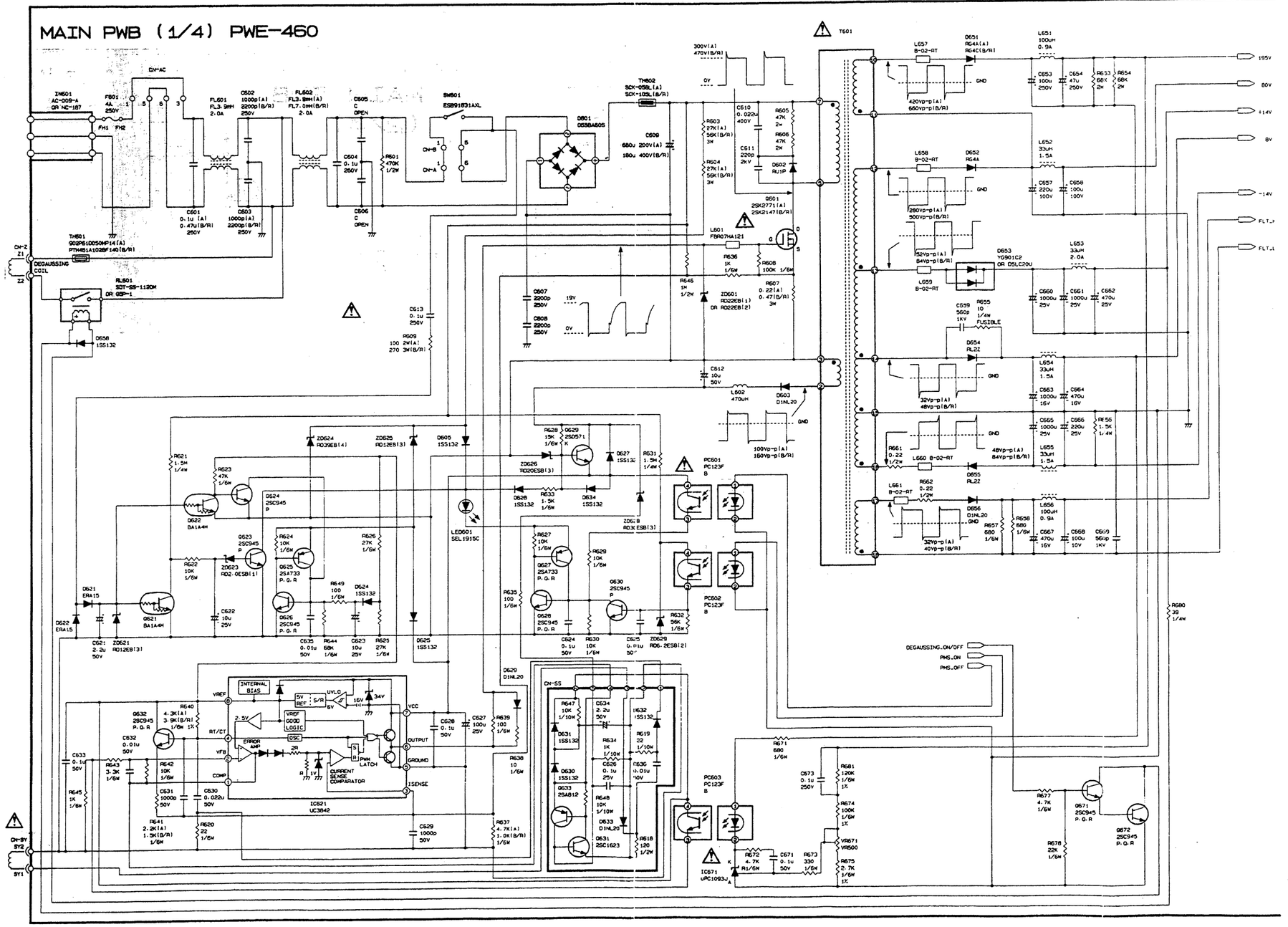
JC-1735VMA/B/R BLOCK DIAGRAM



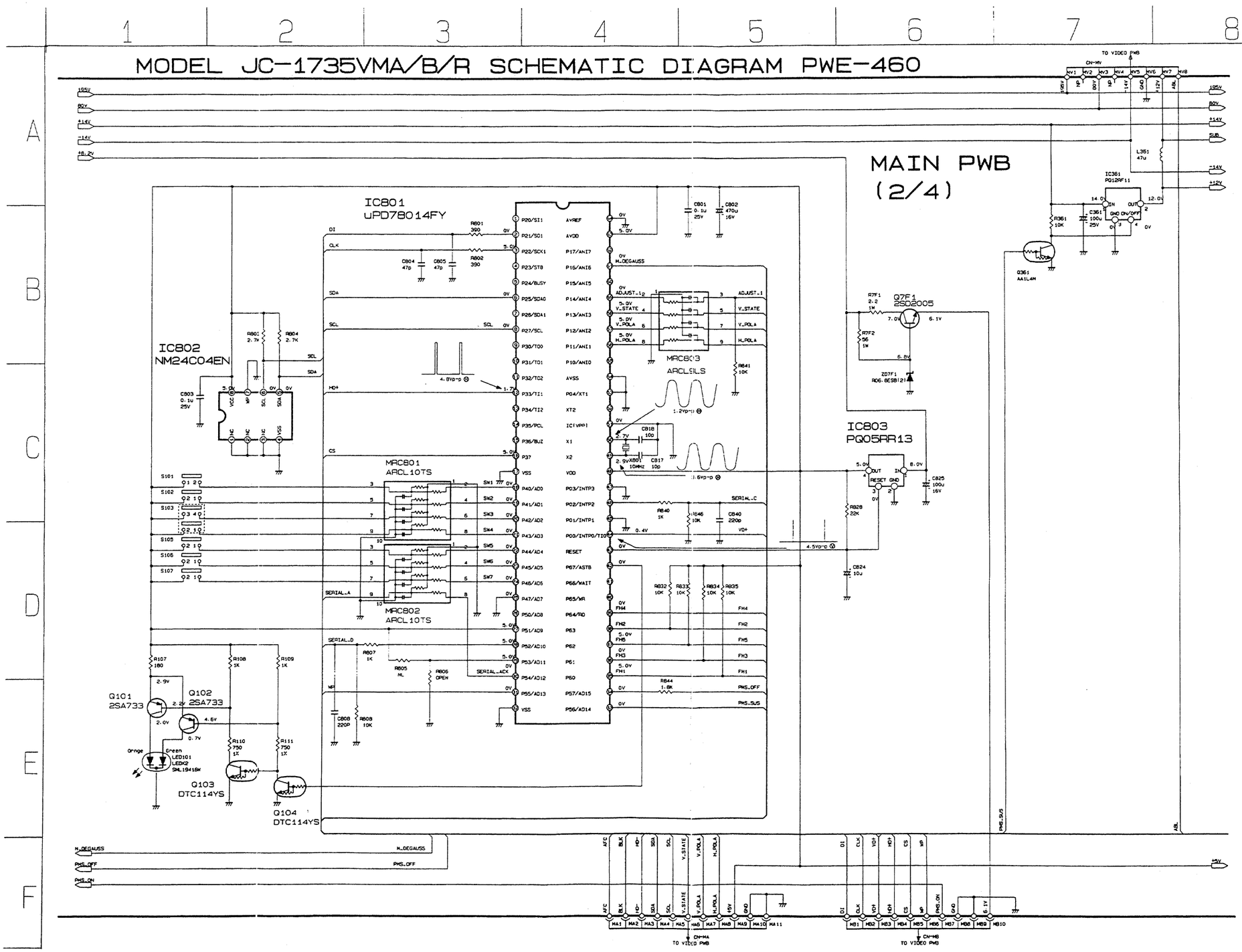
MEMO

MODEL JC-1735VMA/B/R MAIN PWB SCHEMATIC DIAGRAM

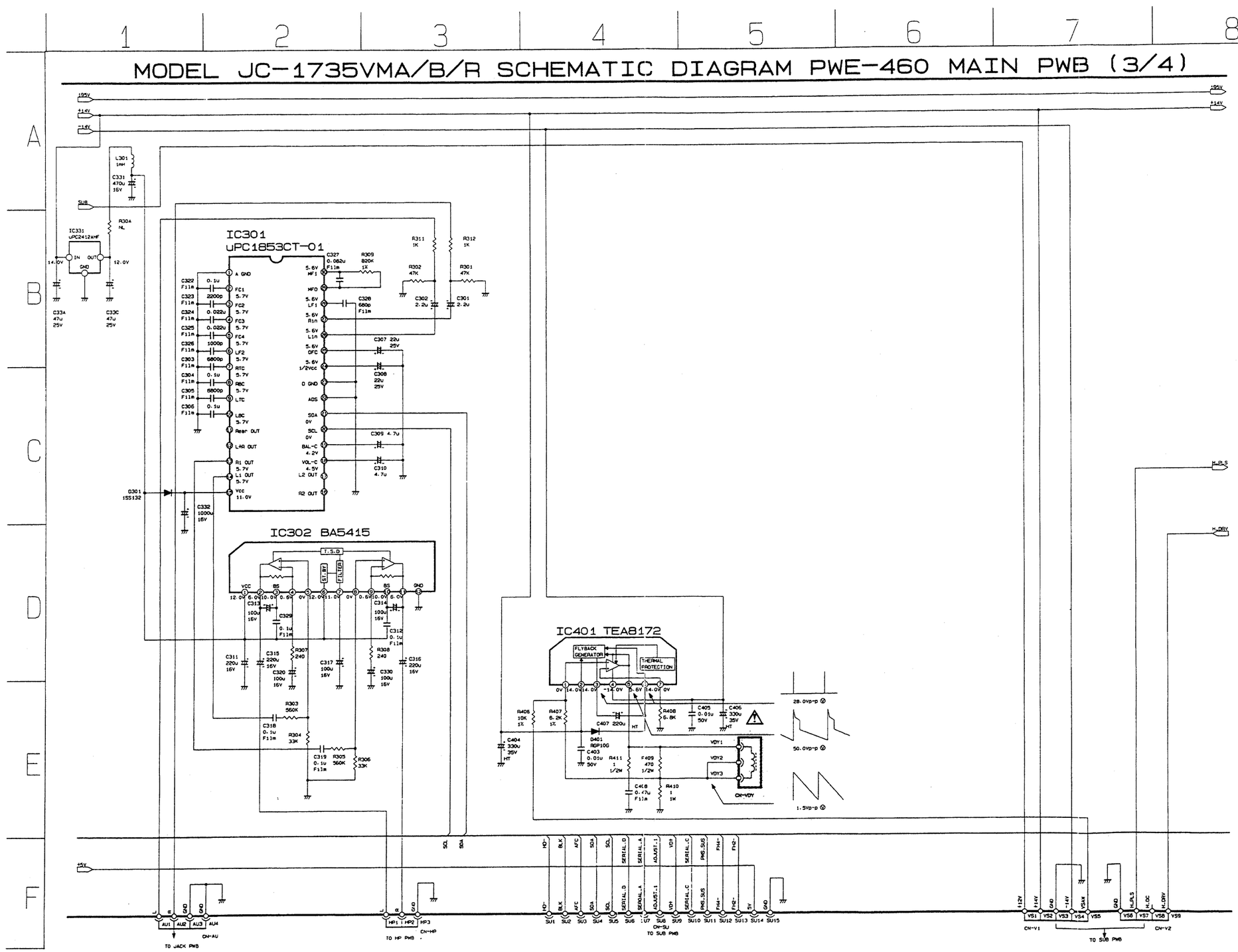
MAIN PWB (1/4) PWE-460



MODEL JC-1735VMA/B/R SCHEMATIC DIAGRAM PWE-460



MODEL JC-1735VMA/B/R SCHEMATIC DIAGRAM PWE-460 MAIN PWB (3/4)



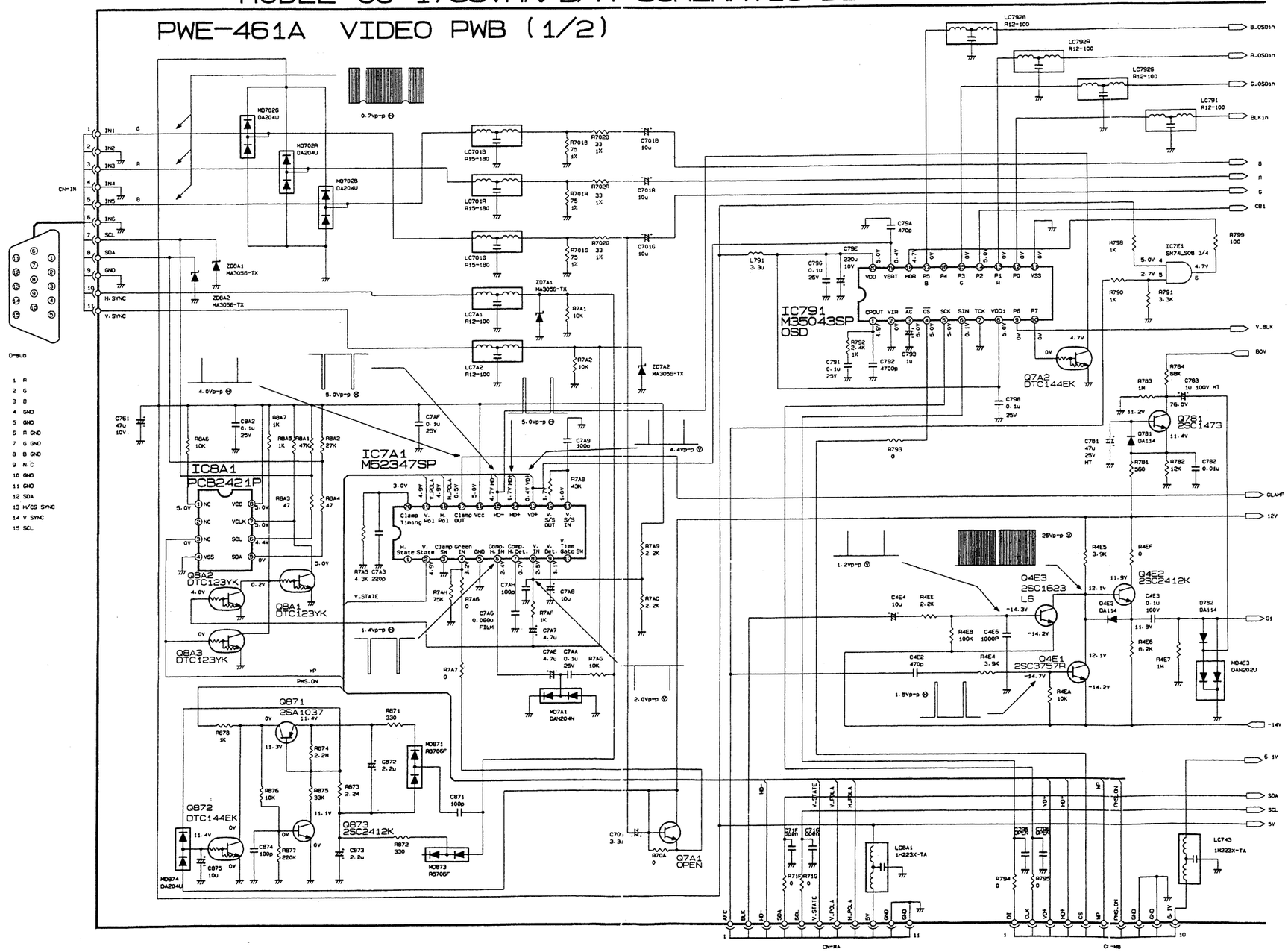
MODEL JC-1735VMA/B/R SCHEMATIC DIAGRAM

PWE-460 MAIN PWB (4/4)

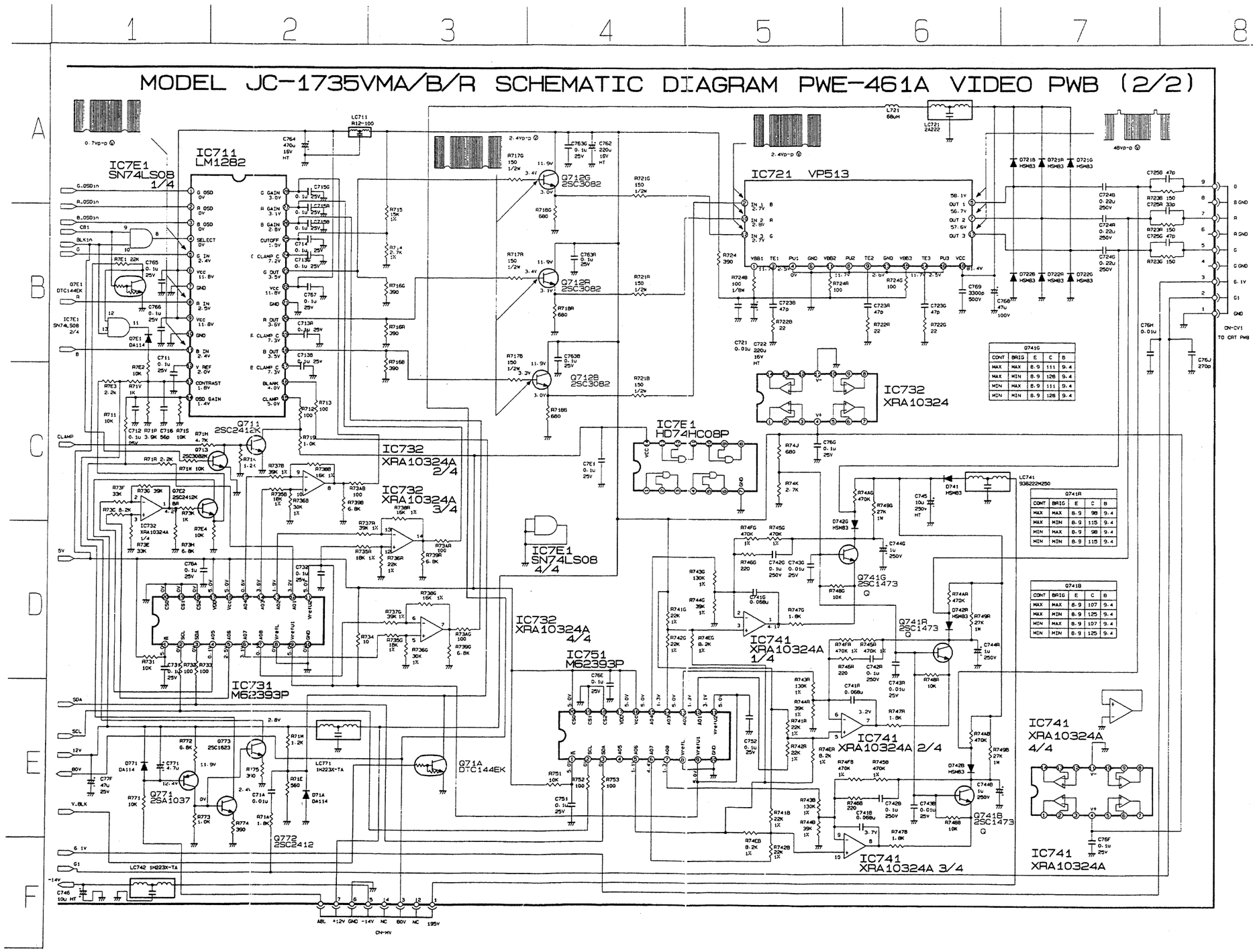
	FH1	FH2	FH3	FH4	FH5
31.5KHz	4.2	0	0	0	
35.0KHz	4.2	0	4.3	0	
37.9KHz	4.2	4.	4.3	0	
49.7KHz	0	0	4.3	5.0	
56.5KHz	0	4.	4.3	5.0	
64.0KHz	4.2	4.	4.3	5.0	
68.7KHz	4.2	4.	4.3	5.0	

MODEL JC-1735VMA/B/R SCHEMATIC DIAGRAM

PWE-461A VIDEO PWB (1/2)



MODEL JC-1735VMA/B/R SCHEMATIC DIAGRAM PWE-461A VIDEO PWB (2/2)

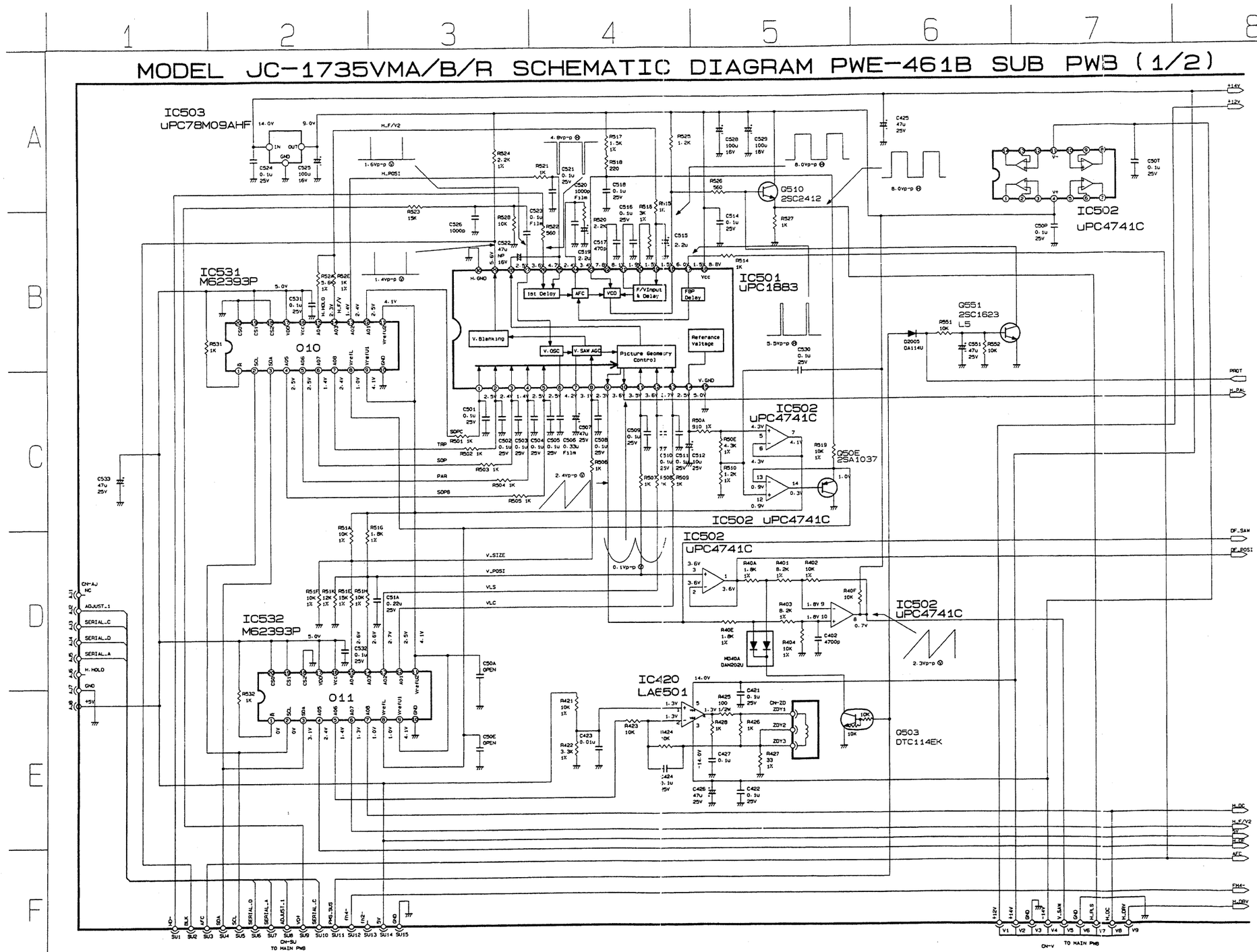


Q741G				
CONT	BRIG	E	C	B
MAX	MAX	8.9	111	9.4
MAX	MIN	8.9	126	9.4
MIN	MAX	8.9	111	9.4
MIN	MIN	8.9	126	9.4

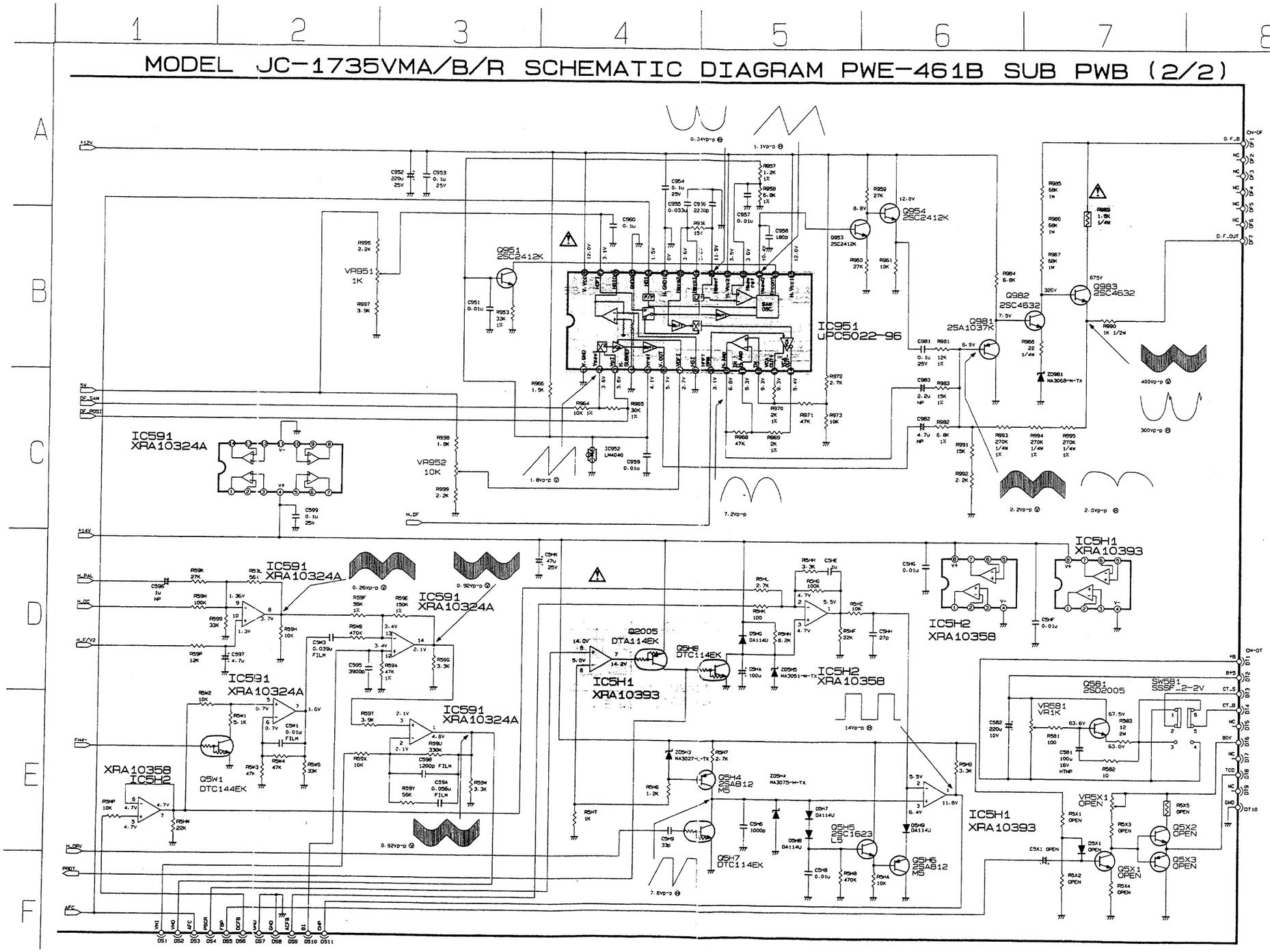
Q741R				
CONT	BRIG	E	C	B
MAX	MAX	8.9	98	9.4
MAX	MIN	8.9	115	9.4
MIN	MAX	8.9	98	9.4
MIN	MIN	8.9	115	9.4

Q741B				
CONT	BRIG	E	C	B
MAX	MAX	8.9	107	9.4
MAX	MIN	8.9	125	9.4
MIN	MAX	8.9	107	9.4
MIN	MIN	8.9	125	9.4

MODEL JC-1735VMA/B/R SCHEMATIC DIAGRAM PWE-461B SUB PWB (1/2)

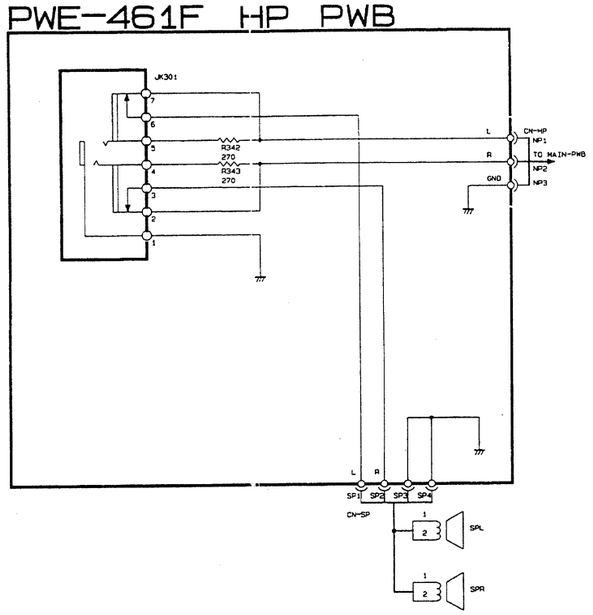


MODEL JC-1735VMA/B/R SCHEMATIC DIAGRAM PWE-461B SUB PWB (2/2)

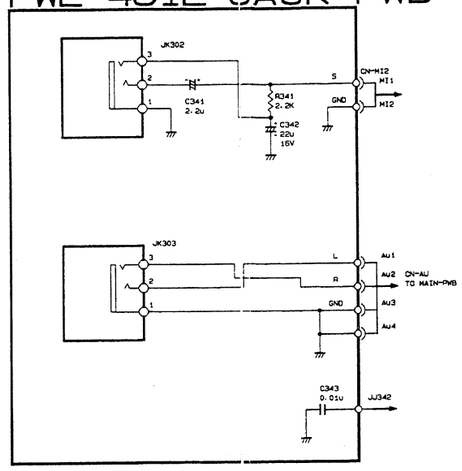


MODEL JC-1735VMA/B/R SCHEMATIC DIAGRAM

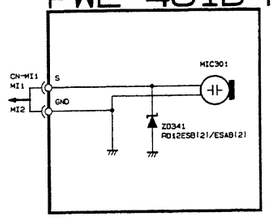
PWE-461F HP PWB



PWE-461E JACK PWB



PWE-461D MIC PWB



NOTES
1. RESISTOR VALUES ARE IN Ω(OHM). K=1,000 M=1,000,000
2. ALL RESISTORS ARE 1/8WATT EXCEPT WHERE OTHERWISE INDICATED.
3. CAPACITOR VOLUES ARE IN μF UNLESS OTHERWISE INDICATED. P=PF
4. ALL CAPACITORS ARE 50VOLTS EXCEPT WHERE OTHERWISE INDICATED.
5. VOLTS AND WAVEFORMS ARE MEASURED UNDER THE INVERTED "H" CHARACTER SIGNALS. THE CONTRAST CONTROL IS MAXIMUM. THE BRIGHTNESS CONTROL IS MINIMUM AND ALL OTHER CONTROLS ARE NORMAL OPERATION.
6. VOLTAGES AND WAVEFORMS ARE MESURD UNDER THE FOLLOWING SYNC. AND VIDEO EXCEPT WHERE OTHERWISE INDICATED.

SYNC :	HORIZONTAL	RATE=31.5KHz
	VERTICAL	RATE=70Hz
	SEPARATE SYNC.	TTL LEVEL
	HORIZONTAL SYNC.	NEGATIVE
	VERTICAL SYNC.	POSITIVE
VIDEO :	ANALOG	0.7Vp-p POSITIVE

7. (H) : HORIZONTAL RATE (V) : VERTICAL RATE
8. L : TTL LOW LEVEL H : TTL HIGH LEVEL
9. (A) : THE PARTS FOR A-VERSION
(B/R) : THE PARTS FOR B/R-VERSION

WARNING
REPLACEMENT PARTS WHICH HAVE SPECIAL SAFETY.
CHARACTERISTICS ARE IDENTIFIED BY ⚠ SHADING OR THE SCHEMATICS.
REPLACE THESE CRITICAL COMPONENTS WITH RECOMMENDED
REPLACEMENT PARTS.
DON'T DEGRADE THE SAFETY OF THE SET THROUGH
IMPROPER SERVICING.

CONTROL (S) MARKED ■ IS PERMANENTLY FROZEN.
DO NOT ATTEMPT TO DEFEAT OR IMPROPERLY REPLACE.

MODEL JC-1735VMA/B/R
SCHEMATIC DIAGRAM
PWE-461C CRT PWB